Garden Bridge
Planning Application

Health Impact Assessment

May 2014

GARDEN BRIDGE

gardenbridgetrust.org

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Glossary of abbreviations and terms

ACPO	Association of Chief Police Officers
AOD	Above Ordnance Datum
AQMA	Air Quality Management Area
BREEAM	Building Research Establishment Environmental Assessment Methodology
BRES	Business Register and Employment Survey
BSI	British Standards Institution
BTP	British Transport Police
CCTV	Close Circuit Television
CPTED	Crime Prevention Through Environmental Design
CSS	Coin Street Secondary
DLA	Disability Living Allowance
DPH	Director of Public Health
EIA	Environmental Impact Assessment
EqIA	Equality Impact Assessment
ES	Environmental Statement
GIA	Gross Internal Area
GiGL	Greenspace information for Greater London
GLA	Greater London Authority
GP	General Practitioner
HEAT	Health economic assessment tool. Created by World Health Organisation (WHO) and used to conduct an economic assessment of the health benefits of a scheme by estimating the value of reduced mortality that results from specified amounts of walking.
HGV	Heavy Goods Vehicle
HIA	Health Impact Assessment
HUDU	[NHS London] Healthy Urban Development Unit
IMD	Index of Multiple Deprivation
IoD	Indices of Deprivation
LB Camden	London Borough of Camden
LB Lambeth	London Borough of Lambeth

LB Southwark	London Borough of Southwark
LSOA	Lower Super Output Areas LSOAs are built from groups of Census output areas, are of a consistent size and are not subject to boundary changes between censuses. In 2011 they were designed to have a population of between 1,000 and 3,000. The average population of LSOAs in England and Wales in 2011 was 1,600. There are 34,753 LSOAs in England and Wales.
LU	London Underground
MPS	Metropolitan Police Service
NCN	National Cycle Network
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NO_2	Nitrogen Dioxide
NPPF	National Planning Policy Framework
ONS	Office for National Statistics
PLA	Port of London Authority
PM_{10}	Particulate Matter up to 10 micrometers in size
RNIB	Royal National Institute of Blind People
SPG	Supplementary Planning Guidance
SWMP	Site Waste Management Plan
TfL	Transport for London
WCC	Westminster City Council
WHO	World Health Organisation

Executive summary

The HIA qualitatively assesses the potential health impacts of the Garden Bridge on a range of social, economic and environmental factors (or determinants) that have the potential to influence people's health and wellbeing.

The HIA has been an iterative process and was instigated at an early stage of design development, which enabled the HIA to influence the final design of the scheme. This ensured that opportunities to maximise any positive effects and minimise any potential negative effects on health were fully realised.

The area surrounding the proposed Garden Bridge, like a lot of locations in the central London Boroughs has a significantly increased daytime population compared with the resident population. The population of both the City of London and Westminster increase by more than 90% as a result of the influx of both workers and tourists. This would mean that any health effects would be likely to be dispersed across a population from a wider geographical area than just the local community.

The area around the proposed Garden Bridge is also characterised by diverse communities, with variations in socio-economic classification and ethnicity. Generally, areas to the north of the River Thames were less deprived and with lower levels of ethnic diversity than to the south of the River Thames, although variations do exist at the neighbourhood level.

In terms of health and wellbeing, the data shows that the health of the local and neighbourhood assessment areas is broadly similar to the London average in terms of self-rated health and life expectancy. Physical activity amongst adults is generally higher than the national average and levels of obesity lower. Although the study area does experience slightly poorer levels of mental wellbeing and higher early death rates from heart disease, stroke and circulatory diseases than the London average.

During construction, there is the potential for some short term health effects, related to the following impacts on the health determinants:

- Temporary loss of open space along The Queens Walk and Bernie Spain Gardens on the South bank as a result of construction access affecting their use for physical activity, relaxation and socialising.
- The addition of construction related traffic on local roads affecting their use by cyclists (particularly commuters) and altering perceptions of road safety for both cyclists and pedestrians, and particularly more vulnerable users such as children and the elderly.

- Increased fear of crime caused by the presence of vacant building sites which can create intimidating environments if not properly lit and managed.
- Potential for impacts on air quality and the noise environment for local sensitive receptors.

Measures outlined in the draft Code of Construction Practice Part A, including noise and air quality control measures, traffic management plans, effective pedestrian diversions, site security measures and timely communication of construction activities should significantly mitigate all potential impacts during construction to negligible levels. On-going monitoring of Code of Construction Practice measures should be undertaken by the contractor to ensure that they have been effective in mitigating potential impacts in relation to traffic, dust, noise and vibration impacts on adjacent receptors, and particularly, sensitive receptors such as residential properties.

The creation of new job opportunities during both the construction and operational phases of the development would have a positive effect on health and wellbeing for those that secure jobs. This assessment is based on the known links between employment and mental health, and the positive health effects of increased wealth on access to services, food and other health determinants. In order to gain further benefits for the health of the local community opportunities should be considered to source local employment during both construction and operation. This may be achieved through promotion of jobs in local job centres and schools/colleges. Construction workers in the local area may financially benefit local service industries such as shops and cafes.

At the operational phase, the Garden Bridge has the potential to have positive effects on health, and particularly mental health and wellbeing as a result of enhancing the existing amenity value of both the South Bank and Victoria Embankment by providing a high quality publicly accessible green space that links these two areas of existing open space.

The Garden Bridge has been designed to provide equality of access to a wide variety of users. It has easy access for wheelchair users through adequate path widths, and suitably sized lifts provide step-free access. Measures have also been integrated into the design to enable the visually impaired to navigate across the Garden Bridge. Seating has been specified that meets the needs of a wide variety of users including children and the elderly.

A number of additional recommendations for implementation during operation of the Garden Bridge should also further enhance the value of the Garden Bridge for children and young people. This includes measures designed to engage them in informal play and education.

Enhanced opportunities to undertake active travel journeys, once the Garden Bridge is operational is likely to have positive effects on physical health as a result of increased levels of physical activity contributing towards a reduction in the risk of many chronic conditions such as heart disease, diabetes and obesity

At the operational phase opportunities for crime and the fear of crime have been reduced through the adoption of ‘Secured by Design’ principles (i.e. designing out secluded areas, careful consideration of lighting strategy and limiting dead ends). Reduction of the fear of crime is assessed to have positive effects on mental health and wellbeing and should encourage greater use of the Garden Bridge by more ‘vulnerable’ groups such as women, older people and people with disabilities. Opportunities exist to further reduce the fear of crime during operation of the Garden Bridge through appropriate staffing levels.

The operational phase is assessed to result in positive effects on mental and physiological health as a result of increased opportunities for social interaction and new places to meet people. Measures during operation to increase the use of the Garden Bridge for community events, and volunteering would further maximise the positive benefits for mental health and wellbeing that could be achieved.

1 Introduction

1.1 The aim of the HIA

1.1.1 This Health Impact Assessment (HIA) has been written in support of the planning applications for the Garden Bridge. It supports a group of documents that cover a range of topics. The guide to the planning application refers you to where specific topics can be found.

1.1.2 The proposed development is known as the Garden Bridge. The Garden Bridge would be for pedestrians only, there would be no commercial premises on the bridge and it would feature a significant amount of planting.

1.1.3 The construction and management of the Garden Bridge would be funded by a charitable organisation known as The Garden Bridge Trust.

1.1.4 The aim of this HIA is to ensure that the Garden Bridge fulfils its potential as an exemplary initiative to improve the physical and mental health and wellbeing of its users. The Garden Bridge has the potential to promote important public health behaviours including active travel, gardening, food growing, social connectivity and relaxation.

1.2 Background to HIA

What is health impact assessment?

1.2.1 The purpose of an HIA is to assess the health consequences of a policy, programme or project and to use this information in the decision-making process to maximise the positive and minimise the negative health impacts of a proposal.

1.2.2 HIA is a multi-disciplinary activity that cuts across the traditional boundaries of health, public health, social sciences and environmental sciences.

1.2.3 The most commonly used definition of HIA is taken from the World Health Organisation (WHO) Gothenburg Consensus Paper:

'……a combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population'[1].

[1] WHO European Centre for Health Policy (1999). Health impact assessment: main concepts and suggested approach. Gothenburg consensus paper. WHO Regional Office for Europe.

Legislative and policy context

European

1.2.4 HIA is promoted at European level in Article 152 of the Amsterdam Treaty.

National

1.2.5 HIA is promoted at UK level in the Government White Paper Saving Lives: Our Healthier Nation (1999).

1.2.6 The Government White Paper: Choosing Health – Making Healthy Choices Easier (2004) outlined the importance of routinely considering the impact of 'non-health' interventions on population health both before implementing policies (through HIAs, for example) and afterwards through evaluation.

1.2.7 The Government White Paper: Healthy Lives, Healthy People: Our strategy for public health in England (2010) does not identify a specific requirement for HIA, but its policies and guidance support this approach.

1.2.8 The National Planning Policy Framework (NPPF, 2012) suggests that future development should be assessed for any expected changes and barriers to health and well-being.

1.2.9 The NPPF states at paragraph 171 that:

'Local planning authorities should work with public health leads and health organisations to understand and take account of the health status and needs of the local population (such as for sports, recreation and places of worship), including expected future changes, and any information about relevant barriers to improving health and well-being.'

Regional

1.2.10 At regional level, the London Plan (GLA,2011), Policy 3.2C Improving Health and Addressing Health Inequalities states that:

"The impacts of major development proposals on the health and wellbeing of communities should be considered through the use of Health Impact Assessment."

1.2.11 The policy is not altered by the 'Revised Early Minor Alterations (REMA) to the London Plan October 2013'.

Local

1.2.12 At a local level, the main policy document dealing with health in the boroughs is the Health and Wellbeing Strategy. Health and wellbeing strategies were reviewed for the five boroughs of WCC, City of London Corporation, LB Lambeth, London Borough of Southwark (LB Southwark) and London Borough of Camden (LB Camden) (These boroughs reflect the 'local

assessment area', further explanation of which is provided in paragraph 3.6.6.) The strategies set out the priorities and actions for a given period to improve the health and wellbeing of people living in, working in and visiting the specific borough.

1.2.13 Health is also a cross-cutting theme that is linked to a number of other local policies. Health is an important consideration within the following policy documents at local (Borough) level:

- Core strategies
- Local plans
- Sustainable community strategies
- Crime and safety policies
- Open space strategies
- Children and young people plans
- Older people strategies

1.2.14 An extensive review of policy relating to health, at a local level, for the five boroughs is provided in Appendix 1.

Definitions and determinants of health

1.2.15 Many groups concerned with health, including the WHO advocate a wider, social understanding of health. The broader understanding of health is captured in the WHO definition:

'Health is a state of complete physical, mental and social well-being and not merely an absence of disease or infirmity[2]'.

1.2.16 The social model of health[3] considers the range of environmental, social, economic and fixed factors (or determinants) that influence health and wellbeing. The key determinants of health can be categorised as follows:

- Pre-determined factors such as age, genetic make-up and gender are fixed and strongly influence a person's health status.
- Social and economic circumstances such as poverty, unemployment and other forms of social exclusion strongly influence health, and improving them can significantly improve health.
- How the environment in which people live, work and play is managed – its air quality, built environment, water quality – can damage health, or provide opportunities for health improvement.

[2] World Health Organisation (WHO), (2007). Constitution of the World Health Organization, Geneva, 1946.
[3] Dahlgren and Whitehead (1991). Social model of health.

- Lifestyle factors such as physical activity, smoking, diet, alcohol consumption and sexual behaviour, can have significant impacts on health.
- Accessibility of services such as the National Health Service (NHS), education, social services, transport (especially public transport) and leisure facilities influence the health of the population.

1.2.17 Of these, only the pre-determined factors are unlikely to be influenced by a development proposal. The HIA will therefore consider all relevant health determinants other than pre-determined factors.

1.3 Aims and objectives of the HIA

1.3.1 The aim of the HIA is to ensure that the Garden Bridge fulfils its potential as an exemplary initiative to improve physical and mental health and wellbeing.

1.3.2 The HIA qualitatively assesses the potential health impacts of the Garden Bridge on the health determinants (see 1.2.16 above).

1.4 Report structure

1.4.1 This HIA report includes:

- Section 2 – A description of the Garden Bridge.
- Section 3 – HIA assessment methodology.
- Section 4 – A community profile.
- Section 5 – An assessment of the potential health effects and recommendations for the Garden Bridge.
- Section 6 – Conclusions.

2 Project Context

2.1 Site location

2.1.1 The Garden Bridge would be located in Central London between Waterloo Bridge and Blackfriars Bridge and would span the River Thames between Temple London Underground (LU) Station at Victoria Embankment and the South Bank.

2.1.2 The site (for construction and operation) occupies an area of 7.1 hectares. The footprint of the Garden Bridge once built and operational would be significantly less than the site area required during construction.

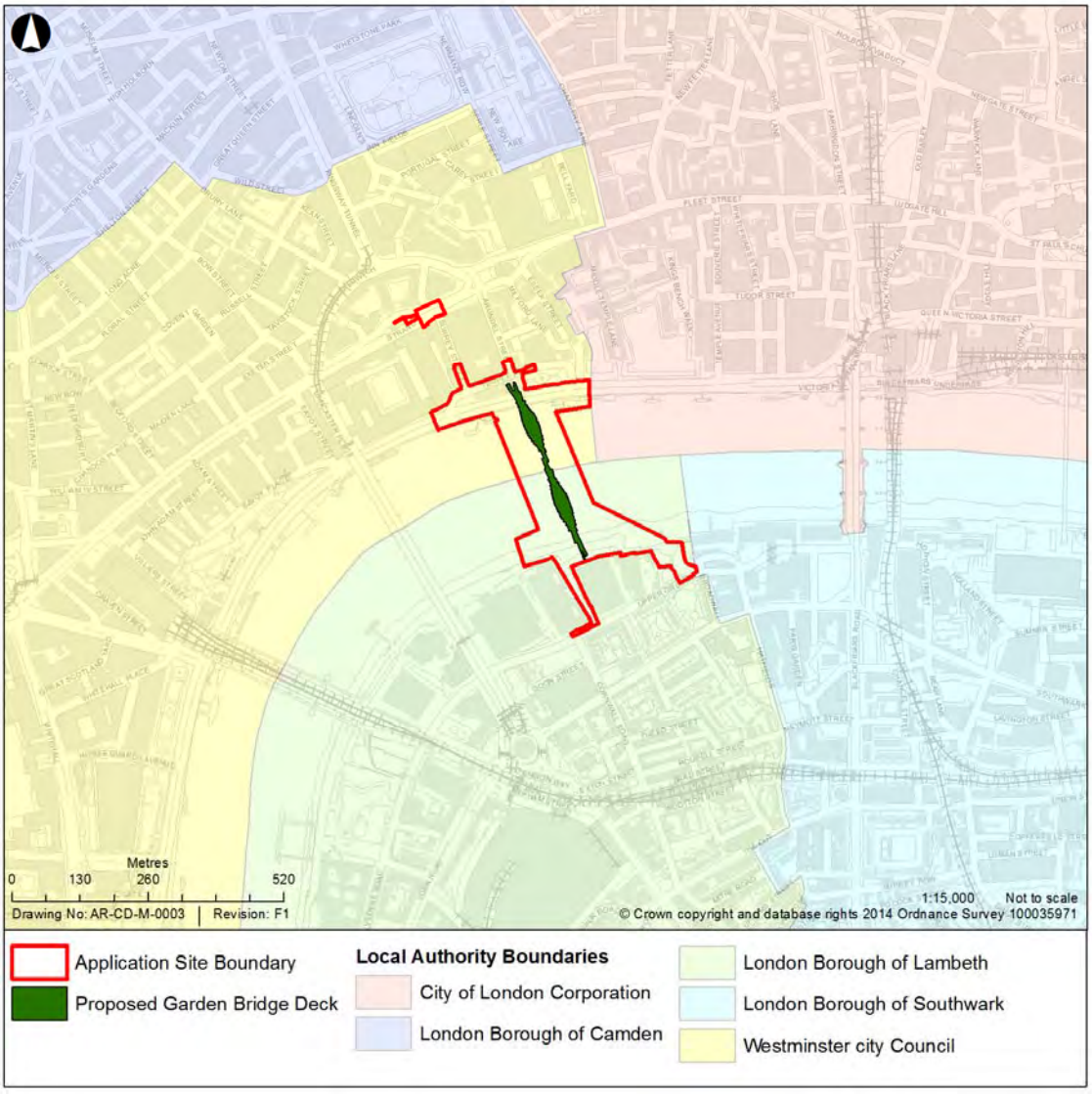

Figure 2.1: Red line boundary for the Garden Bridge and local authority boundaries

2.1.3 The Garden Bridge would be located within the boundaries of WCC on the north bank and the LB Lambeth on the south bank

as shown in Figure 2.1: Red line boundary for the Garden Bridge and local authority boundaries.

2.1.4 The site also lies in close proximity to three additional local authorities:

- The LB Southwark is approximately 200m to the east, on the south side of the River Thames;
- The LB Camden lies approximately 500m to the north; and
- The City of London Corporation is approximately 100m to the east on the north side of the River Thames.

2.2 The Garden Bridge

Project background

2.2.1 The Garden Bridge is a proposed new footbridge spanning the River Thames, linking Temple in the City of Westminster and the South Bank in the London Borough of Lambeth. The Garden Bridge is the concept of the actress Joanna Lumley and has been designed by Heatherwick Studio, Dan Pearson Studio and Arup.

2.2.2 The Garden Bridge Trust is a new charity established to promote and seek funding to build and maintain the bridge. Transport for London (TfL) is supporting the Trust to develop the design and seek planning permission for the scheme.

2.2.3 The Garden Bridge would feature a substantial garden. It would be highly sculptural with two piers supporting the garden. The structure would widen and narrow across its span to create a dynamic crossing experience for London's pedestrians. The

bridge would create a unique place and an alternative accessible pedestrian only route away from vehicles. The garden would feature trees, shrubs and flowers laid out in a series of five landscape characters to create a green link between the open spaces of the north and south banks of the River Thames.

2.2.4 The objectives of the Garden Bridge are to:

- To create a new pedestrian crossing over the River Thames in Central London that would reduce severance and contribute towards an increase in north-south movements across the river by foot;
- To contribute towards improving the quality of the pedestrian environment and public realm in Central London that would support an increase in walking across Central London as a whole;
- To improve transport connectivity, efficiency and resilience for the South Bank area by providing a direct connection to the London Underground network at Temple;
- To support the economic development of areas adjoining the bridge on both sides of the river and to help bring forward development;
- To support central London's visitor and tourist economy; and
- To create a new public open space and garden in Central London.

Scheme description

2.2.5 The scheme comprises the Garden Bridge – a new pedestrian crossing between the South Bank and Temple on the north bank – together with landings on both the north and south banks of the River Thames within the City of Westminster and London Borough of Lambeth respectively. On the north bank the bridge lands on the roof of the existing Temple London Underground (LU) Station. The south landing would be located adjacent to the ITV building on the South Bank and would comprise a new building housing maintenance, storage and welfare facilities for the bridge staff and a combination of approximately 410m^2 of retail (A1) and/or restaurants (A3) and/or a visitor centre/community/educational use (D1) floorspace (excluding plant and circulation space).

2.2.6 A garden would be planted on the deck of the bridge, including approximately 270 trees (c. 45 species). In addition, shrubs, climbers, grasses, hedges and perennials would create diverse and dense planting.

Key constraints on design of the Garden Bridge

2.2.7 The geometry of the bridge has been developed with due regard to numerous physical, technical and operational constraints. These include the need to:

- maintain a minimum clearance of 7.3m over the highway at Victoria Embankment;
- minimise disruption to vehicular traffic flows to the Temple area during both construction and operation of the bridge;
- maintain a minimum clearance of approximately 12.6m above Mean High Water for the main navigational channel of the River Thames;
- maintain a minimum clearance of approximately 11.9m above Mean High Water for the secondary navigational channel located to the south of the main navigation channel;
- minimise the effect on protected London views and river prospects, particularly in terms of height of the bridge deck, planting and lighting;
- ensure the bridge is accessible, including managing gradients of the bridge deck;
- ensure path widths and vertical circulation at each landing is sufficient to meet anticipated demand;

- ensure planted areas on the bridge are sufficient to provide the experience of a garden;
- incorporate measures to reduce the risk of crime and anti-social behaviour;
- provide storage and welfare facilities for the gardeners required to maintain the garden;
- maintain a minimum clearance of 4.5m over The Queen's Walk;
- ensure pedestrian movement is not permanently compromised on The Queen's Walk; and
- ensure a future north-south link from The Queen's Walk to Upper Ground is not compromised.

North bank

2.2.8 The Garden Bridge would land on the existing roof of Temple LU Station in the City of Westminster. Access on and off the bridge would be provided by stairs and two lifts (maximum capacity of 1275kg - nominally 17 persons - for each lift) from the bridge deck to the existing Temple LU building roof level. The existing stairs to Temple Place at the east end of the roof would be replaced by new stairs and a ramp.

River Thames

2.2.9 The extent of the bridge span is 366m. The width of the bridge varies from approximately 30m over the piers to approximately 6.5m at its narrowest point at the centre of the span. The distance from the southern river wall to the south pier is approximately 84m and from the northern river wall to the north pier is approximately 26m. The distance between the two piers is approximately 165m.

2.2.10 The maximum height of the bridge deck is 18.2m AOD. A clearance of approximately 13.0m above Mean High Water is proposed at the centre of the bridge span. The height of the bridge soffit would be approximately 6.7m above the level of The Queen's Walk. The height of the bridge soffit would be approximately 8.5m above Victoria Embankment.

South bank

2.2.11 At the southern end of the bridge the roof of a new building in the London Borough of Lambeth would form a podium level for the south landing. Access from the bridge deck to the podium level is provided by a set of stairs and two lifts (maximum capacity of 1275Kg – nominally 17 persons – for each lift). The maximum height of the lift shaft would be 17.4m AOD (12m above The Queen's Walk). Stairs from the podium level to The Queen's Walk would be located at both the eastern and western end of the building.

2.2.12 The south landing building would be approximately 68m long (northern elevation), 19m at this widest point and 4m high from the level of The Queen's Walk (excluding balustrade and lift shaft). The total Gross Internal Area (GIA) of the south landing building would be 725m^2. Maintenance, storage and welfare facilities for the Garden Bridge staff would be provided at the western end of the building (comprising 157m^2 of floorspace). The remaining floor area would comprise a combination of approximately 410m^2 of A1 and/or A3 and/or D1 floorspace. An electrical substation would be located in the south-west corner of the building.

Operation and management

2.2.13 For the purposes of the planning application it is assumed that the bridge would be open between the hours of 0600 and 0000 for 365 days per year. Outside of these hours the bridge would be closed to the public. It is acknowledged however, that the opening hours may change in the future.

2.3 Overview of the construction activities

2.3.1 Principal construction elements for the Garden Bridge comprise the following elements:

- landings and associated stairs, lifts and bridge approach structure;
- balanced cantilevers including the piers and the radiating structures; and
- central closing element.

2.3.2 The north landing would utilise the existing Temple London Underground Station roof, refurbished to receive the landing for the Garden Bridge. The south landing building would be a reinforced concrete framed structure with bored piled foundations and glazed façade. The bridge, however, is a unique structure; the primary structure is a system of steel trusses radiating out from the two river piers supporting a composite 90:10 copper nickel / steel bonded plate which forms the external skin of the bridge.

2.3.3 The roughly symmetrical geometry of the Garden Bridge lends itself to a construction technique called balanced cantilever construction for the substantial part of the bridge centred on the pier locations. The bridge deck would be completed by approach structures to the north and south and a single central closing element.

2.3.4 The construction of the Garden Bridge would involve a combination of marine and land-based works. Because of marine conditions, the construction strategy would therefore maximise the works that can be either pre-constructed on land or supplied from land.

2.3.5 In order to maximise the works that can be pre-constructed on land, a remote worksite would be required. The selection of the remote location(s) would be the responsibility of the contractor and does not require any pre-selection since there are suitable locations along the Thames Estuary and river front.

2.3.6 The remote site would primarily be used for the marshalling of the river-borne craft, sub-assembly of road transported elements into larger barge transportable pieces and the loading of materials for the construction.

North site establishment

2.3.7 Construction worksites would be established both north and south of the River Thames in the vicinity of the proposed landing areas. North of the river, Temple Place would be closed for the duration of construction between Surrey Street and Arundel Street. The footway on the north side of Temple Place would remain open to pedestrians with suitable controlled crossing points established.

2.3.8 The worksite north of the River Thames would also occupy the roof of Temple LU Station. This roof area, normally publicly accessible during daytime, would be closed to the public for the duration of construction. The roof would be used for site accommodation and the storage of materials and equipment.

2.3.9 The worksite would also include a location using the pavement on the south side of Victoria Embankment. This would be used for pumping concrete at various stages of the construction, particularly the early foundation stages.

2.3.10 Some temporary lane closures of Victoria Embankment are likely to be required at key stages of construction, e.g. assembly of large sections of the north parts of the bridge which span the highway. Closure for a weekend of Victoria Embankment would be required during the erection of the north span of the bridge.

2.3.11 A temporary access bridge would be constructed from the north landing worksite to the north pier location to provide access for construction workers and a route for a concrete pumping main. This access bridge would span Victoria Embankment. Trestle supports on the north pavement of Victoria Embankment, and potentially a crash deck, would be required for the erection of the landward northern span of the Garden Bridge.

South site establishment

2.3.12 South of the River Thames, the worksite would occupy part of The Queen's Walk and adjacent areas. The extent of the worksite would depend on the access option selected (described in paragraphs 2.3.16 to 2.3.23).

2.3.13 A temporary access bridge would be constructed from the south landing worksite to the south pier location to provide access for

construction workers and a route for the concrete pumping main. This access bridge would span The Queen's Walk and would be sufficiently high to avoid obstructing the southern navigation channel defined by the Port of London Authority (PLA). As with the northern temporary access bridge, it would be likely that it would be enlarged to provide a crash-deck for the erection of the landward southern span of the Garden Bridge.

Road access north

2.3.14 The worksites would be accessed by construction plant and vehicles making deliveries and removing waste. It is assumed that construction workers would access the site by foot, bicycle or public transport. No parking would be provided for the construction workforce.

2.3.15 Direct access to the north worksite would be from the highway network. Victoria Embankment would provide access to the strategic highway network with vehicles accessing the worksite via Temple Place.

Road access south

2.3.16 Three options, A, B and C, have been assessed in terms of access to the worksite south of the River Thames. These are described below. In all cases, construction road traffic access would be via the A201 Blackfriars Road and A3200 Stamford Street to Upper Ground.

2.3.17 Options A and B would provide access to the south landing worksite for the delivery of bridge sections and concrete as well as the materials required for construction of the south landing building. Option C would be similar to Option A but with access through ITV / IBM for light vehicles and for the pumping of concrete to the worksite, with other materials arriving via the River Thames.

Option A ITV/IBM

2.3.18 Construction access Option A would see vehicles accessing the south landing worksite using the route between the IBM Building and ITV Studios. The hoarding line for the worksite would extend along this route as far as Upper Ground. No public access along this route would be permitted but existing emergency escape routes from the adjacent buildings would be maintained.

2.3.19 The Queen's Walk would remain open during construction with the exception of short periods required for the erection of access bridges, trestles, crash-decks and the assembly and erection of the southern sections of the Garden Bridge. Part of The Queen's Walk adjacent to the worksite would be enclosed with a crash deck to enhance the safety of the public.

Option B Bernie Spain Gardens

2.3.20 Construction access Option B would see vehicles accessing the south landing worksite through Bernie Spain Gardens. The hoarding line would extend to encompass a large section of the north part of the Gardens.

2.3.21 The Queens Walk between Bernie Spain Gardens and the IBM Building would be closed to the public for the duration of construction. Pedestrians would be diverted through the ITV/IBM access route, along Upper Ground and back to The Queens Walk via the eastern part of Bernie Spain Gardens. Access to Gabriel's Wharf from Upper Ground would be maintained.

Option C limited ITV/IBM and maximum river option

2.3.22 As stated above, Option C would provide access to the south landing worksite for conventional building materials and light equipment only, with other materials arriving via the River Thames. Road access would use the route between the IBM Building and ITV Studios. As with Option A, the hoarding line for the worksite would extend along the ITV/IBM access route as far as Upper Ground. This route would also be used to accommodate a concrete pipe-main to supply concrete to the site from a hopper located in Upper Ground in front of the IBM building. When in use, there would be a requirement for the parking and discharging of concrete trucks in Upper Ground.

2.3.23 This option would require the construction of a purpose-built piled platform deck in the River Thames because of the increased number and size of lifts from the River onto the south landing worksite. Because of the attendant risks to public safety, it is proposed to close The Queens Walk from the IBM Building to Prince's Wharf for the duration of construction. Pedestrians would be diverted through the ITV/IBM access route, along Upper Ground and back to The Queens Walk via Gabriel's Wharf or Bernie Spain Gardens.

Construction programme

2.3.24 The indicative construction programme covers a period of approximately 35 months. This covers 7 months of mobilisation works; followed by in-river works; construction of the north and south landings; installation of the bridge; and finishing works

Draft Code of Construction Practice Part A

2.3.25 A draft Code of Construction Practice, Part A: General Principles has been produced (Transport for London, February 2014). This document outlines a series of measures to minimise the impacts of construction on the environment that have been identified in developing the outline design of the scheme and whilst undertaking the Environmental Impact Assessment. Compliance with the draft Code of Construction Practice Part A

would be a requirement of the agreement between The Garden Bridge Trust ("the Promoter") which is the body responsible for delivering the Garden Bridge and the Contractor selected to construct the scheme ("the Contractor").

2.3.26 A copy of the draft Code of Construction Practice Part A is provided in the appendices of the Garden Bridge Environmental Statement (ES). The document sets out the purpose of the draft Code of Construction Practice Part A, the mechanisms by which environmental requirements are managed, and the environmental requirements on a topic by topic basis, including:

- general requirements;
- air quality;
- biodiversity;
- cultural heritage;
- land quality;
- noise and vibration;
- surface and groundwater;
- traffic and transport; and
- waste and materials.

2.3.27 A Code of Construction Practice Part B would be prepared for WCC and the London Borough of Lambeth and would set out site-specific standards and the measures which would be used at identified locations or for activities within a relevant local authority area. All the specific standards and measures in the Part B documents would be consistent with the general principles set out in the Part A document.

2.4 Other developments within the area

2.4.1 An exercise has been undertaken as part of the Environmental Impact Assessment (EIA) to establish a list of cumulative developments that may result in cumulative effects on the environment (and health outcomes) during construction and/or operation of the Garden Bridge. Selection was based on a combination of catchment area, type/size of development and planning status (full details are available in the Garden Bridge ES. As a result, eight developments were identified (see Table 2.1 below).

Table 2.1: Location of cumulative developments

	Westminster City Council	City of London Corporation	LB Lambeth	LB Southwark
Arundel Great Court	✓			
190 Strand	✓			
Thames Tideway Tunnel including Blackfriars Bridge Foreshore site	✓	✓		
Royal National Theatre			✓	
Doon Street			✓	
The Southbank Centre			✓	
Sea Containers House				✓
Southbank Tower / Kings Reach Tower				✓

2.4.2 The location of these proposed developments is shown on Figure 2.2.

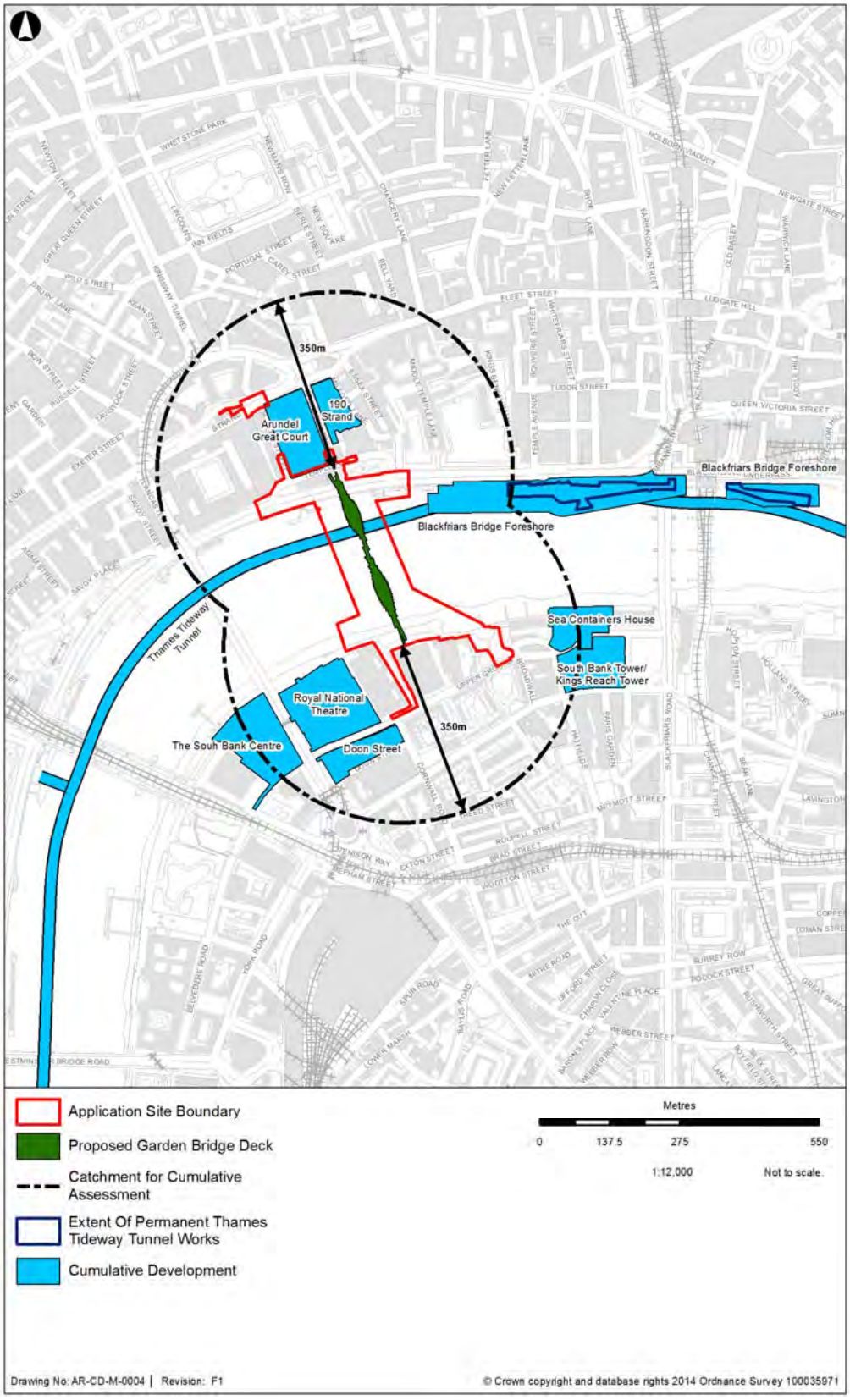

Figure 2.2: Location of cumulative developments

3 Assessment methodology

3.1 HIA guidance

3.1.1 The Garden Bridge HIA is steered by the Planning for Health 'Rapid Health Impact Assessment Tool' and guidance produced by the NHS London Healthy Urban Development Unit (HUDU, 2013). The HUDU tool is TfL's preferred methodology.

3.1.2 The tool is designed to assess the likely health impacts of development plans and proposals, including planning frameworks and masterplans for large areas, regeneration and estate renewal programmes and outline and detailed planning applications. It is partly based on the World Health Organization publication Healthy Urban Planning by Hugh Barton and Catherine Tsourou (2000).

3.1.3 It helps identify those determinants of health which are likely to be influenced by a specific development proposal. It does not identify all issues related to health and wellbeing, but focuses on the built environment and issues directly or indirectly influenced by planning decisions. Not all the issues or assessment criteria may be relevant and the user is encouraged to prioritise specific actions which focus on key impacts.

3.2 HIA Governance

3.2.1 This HIA was undertaken by Arup's HIA consultant and was overseen by TfL. Input and review at all stages of assessment was provided by a public health professional from the Greater London Authority (GLA).

3.3 Scoping of health impacts

3.3.1 A scoping workshop, led by Arup, was undertaken with TfL and a public health professional from the GLA, to establish a short-list of health determinants for the HIA. The workshop was structured around the HUDU tool checklist.

3.3.2 The HUDU Rapid HIA Tool checklist identifies the following potential health determinants that may be relevant to a given project:

- housing quality and design
- access to healthcare services and other social infrastructure
- access to open space and nature
- air quality, noise and neighbourhood amenity
- accessibility and active travel
- crime reduction and community safety

- access to healthy food
- access to work and training
- social cohesion and lifetime neighbourhoods
- minimising the use of resources
- climate change

3.3.3 A review of the Garden Bridge was conducted against the assessment criteria outlined under each determinant in the checklist. It established which issues have the potential to impact on health and wellbeing and an initial indication of whether the impact was beneficial or adverse.

3.3.4 Based on this review an initial assessment was made on which determinants would be examined in further detail in the assessment and which could be excluded. The scoping workshop also helped to identify the order of the chosen determinants based on which were deemed to have the biggest impact.

3.3.5 The results were recorded in a Scoping Report, a copy of which is available in Appendix 3. Sections 5.1 to 5.9 of this report provide an assessment of health impacts and effects for those determinants that were taken forward for further examination and the order of determinants in section 5 reflects their relative importance with regard to the Garden Bridge project.

3.3.6 The following determinants were scoped out of any further assessment within the HIA:

- Housing quality and design - there would be no homes included in the proposed development. Therefore access to decent and adequate housing is not an issue.
- Access to healthcare services and other social infrastructure - the proposed development would not impact on existing health or social care services or influence the demand and/or capacity of public services. General issues related to access and connectivity to local services was covered under ‘accessibility and active travel’.

3.4 Consultation and engagement

3.4.1 The HIA Scoping Report was circulated to the Directors of Public Health (DPH’s) in WCC, City of London Corporation, LB Lambeth, LB Southwark and LB Camden. Copies were also sent to Public Health England, HUDU and the borough planning officers for WCC and LB Lambeth. Issues raised through this consultation process have been taken into consideration in the HIA.

3.4.2 Feedback was generally positive, with the DPH’s excited about the opportunities the Garden Bridge may bring to promote positive public health behaviours, including active travel, social

connectivity and relaxation. There was also support for making the bridge alcohol free and smoke free. The approach to feed recommendations into the on-going design process was strongly supported as was the cross-reference to EIA mitigation.

3.4.3 The key issues raised through consultation with the DPH's on the HIA Scoping Report include:

- Concerns around management of the Garden Bridge to ensure health and wellbeing promotion. For example, how will a smoke free and alcohol free bridge be achieved, how will crime and anti-social behaviour be minimised, and how will illegal food vendors be deterred.
- It is important that local people and potential vendors in the area have been properly engaged in the consultation, and that they benefit from the Garden Bridge as well as commuters and tourists. The Garden Bridge needs to contribute towards social cohesion with the local community and provide opportunities for community participation and involvement.
- The Garden Bridge should not exist in isolation, and the project should work alongside partners for a broader vision for improvements to walking and cycling in the surrounding area including neighbouring bridges. This should also include the provision of secure cycle parking and cycle hire stands at both ends of the Garden Bridge.
- It would be beneficial to properly assess the need for public toilets in the area, considering that the Garden Bridge proposes to become a destination in itself, as current facilities may be inadequate, and this may discriminate disproportionately again older people and disabled people.
- A number of respondents raised concerns about construction impacts on the local community, particularly with regard to possible noise and air quality effects.
- The need to consider monitoring of recommendations and mitigation measures or some sort of follow-up study to ensure that the Garden Bridge meets its objectives with regard to health.

3.4.4 A more detailed summary of the outcomes of the consultation are provided in Appendix 4, along with details on how the HIA has responded to these comments.

3.4.5 Public consultation was also undertaken on the Garden Bridge between 1 November 2013 and 20 December 2013. In total there were 2,451 responses to the consultation. Of these, 2,424 responses were from members of the public and 27 were provided by stakeholders. The Garden Bridge Consultation questionnaire consisted of six questions, including three open questions. The overall response to the Garden Bridge was

supportive, with 87% of respondents in support (of whom 20% suggested a change to further improve the scheme). Support varied according to geography to some extent. Support was high in London and slightly higher outside the Capital. Support in the City of Westminster and the LB Lambeth (the boroughs in which the Garden Bridge would be sited) was high at around 85%.

3.4.6 Although there was not a specific question related to health and wellbeing in the questionnaire, the results were reviewed to identify where any issues related to health were raised.

3.4.7 A number of responses reflected those issues addressed in the HUDU topic areas that form the basis of this HIA.

- Health/wellbeing was mentioned in a number of responses; with 32 respondents feeling that the Garden Bridge would have a positive effect on Londoner's health and wellbeing.
- The words, relax/enjoy/calm/peace were mentioned in over 100 responses with respondents highlighting that the Garden Bridge will provide a quiet, peaceful, relaxing space for people to enjoy.
- Exercise was specifically mentioned in four responses and a large number of respondents felt that it was positive that the Garden Bridge would provide a public, leisure space for people's enjoyment (106 respondents).
- Walking/cycling was mentioned in a number of responses, with many respondents wanting cycling to be a key part of the scheme. The role of the Garden Bridge in encouraging sustainable travel was mentioned by 68 respondents.
- The most common design suggestion was to provide places for people to sit so that young and old could rest, reflect and take in the view (31 respondents).
- The second most popular design suggestion reflected a desire to see the Garden Bridge used for educational purposes (25 respondents). Ideas included bird watching platforms, bird boxes, interpretation panels or plaques detailing the species living or growing on the Garden Bridge, beehives, a living wall, information/short courses on gardening techniques and getting schools involved in tending to the plants.
- Improved access between various destinations resulting from the Garden Bridge was mentioned by many:
    - Between the north and south banks of the River Thames (109 respondents)
    - From the South Bank to central London/West End (35 respondents)
    - From the South Bank/Waterloo to Temple LU Station (33 respondents)

  - From Covent Garden to the South Bank (12 respondents).
- Nature was mentioned by over 20 respondents.
- Crime/safety/security was mentioned by over 30 respondents.
- No smoking and no alcohol was mentioned in a number of responses.
- Air quality/pollution and the role of the Garden Bridge in reducing pollution were highlighted by 29 respondents.
- Noise was mentioned in 17 responses.
- Jobs/employment was mentioned in 8 responses.
- Volunteering was mentioned by 13 respondents.

3.5 HIA input to design

3.5.1 Starting the HIA at an early stage of project development has enabled health and wellbeing issues to influence design, thus enhancing the benefits of the Garden Bridge for health and limiting any potentially negative impacts on health.

3.5.2 Outputs from the HIA scoping workshop were discussed with the design team at a design workshop at the beginning of September 2013. Further information on the design considerations raised at this workshop can be found in the Garden Bridge HIA Scoping Report.

3.5.3 The design team responded positively to these design considerations and further details on how the HIA process has influenced design can be found within the relevant determinant assessment sections (sections 5.1 to 5.9).

3.6 Structure and method of the assessment

Policy review

3.6.1 National, regional and local policies, plans and strategies relevant to health, including National Institute for Health and Care Excellence (NICE) public health guidance, have been reviewed to provide a rationale for the HIA. The policy review for the HIA includes local policies relevant to health such as:

- Health and wellbeing strategies
- Sustainable community strategies.

3.6.2 The aim has been to identify local health policies and review how the Garden Bridge impacts on these, both positively and/or negatively.

Baseline data gathering

3.6.3 Baseline data was collated from a range of sources to provide an overview of the existing population, existing health profile, socio-economic conditions in the local community and the physical environment in the locale. The baseline community profile is reported in section 4, and a baseline is reported under each determinant in sections 5.1 to 5.9.

3.6.4 This gathering of baseline data has been coordinated with other workstreams and deliverables for the planning application such as the Environmental Statement (ES), the Equality Impact Assessment (EqIA) and the Sustainability Statement.

3.6.5 The data reviewed included, but was not limited to:

- Public Health England 'Health Profiles' 2013;
- The Department of Communities and Local Government 'The English Indices of Deprivation' 2010;
- Office for National Statistics (ONS), Census 2011 data;
- Joint Strategic Needs Assessments for each borough; and
- Public Health Outcomes Frameworks for each borough.

Geographical scope

3.6.6 The HIA as a whole encompasses London as the regional area, but also assess data at the borough level (Local assessment areas) and Census Lower Super Output Areas (LSOAs[4]) (Neighbourhood assessment areas) as shown in Figure 3.1 and Figure 3.2. At the regional level data will encompass not only the resident population, but also the characteristics of the daytime population, including office workers and tourists.

Table 3.1: Local and neighbourhood level geographies

Local assessment area (borough)	Neighbourhood assessment area (LSOA)
City of Westminster	Westminster 018A
	Westminster 018B
LB Lambeth	Lambeth 001D / 036C
	Lambeth 001E / 036D

[4] LSOAs are built from groups of Census output areas, are of a consistent size and are not subject to boundary changes between censuses. In 2011 they were designed to have a population of between 1,000 and 3,000. The average population of LSOAs in England and Wales in 2011 was 1,600. There are 34,753 LSOAs in England and Wales. Super Output Areas are specifically designed for statistical purposes. In particular, they are used by both central government departments and local authorities for a range of purposes including planning and monitoring of services.

Local assessment area (borough)	Neighbourhood assessment area (LSOA)
	Lambeth 001A / 036E
City of London Corporation	City of London 001D / 001G
LB Southwark	Southwark 002C
	Southwark 005A / 034D
LB Camden	Camden 028B
	Camden 028C
	Camden 028D

3.6.7 LSOA boundaries were amended in 2011 from 2003 boundaries and some data was not yet available for the 2011 LSOAs. Where 2011 LSOA boundaries were unavailable for a certain dataset, the direct equivalent 2003 boundary has been included. The exception is City of London 001D which was split into two LSOAs (City of London 001D and City of London 001G) in 2011, and covers a larger areas eastward than City of London 001G. In cases where City of London 001G data is unavailable, City of London 001D data has been included.

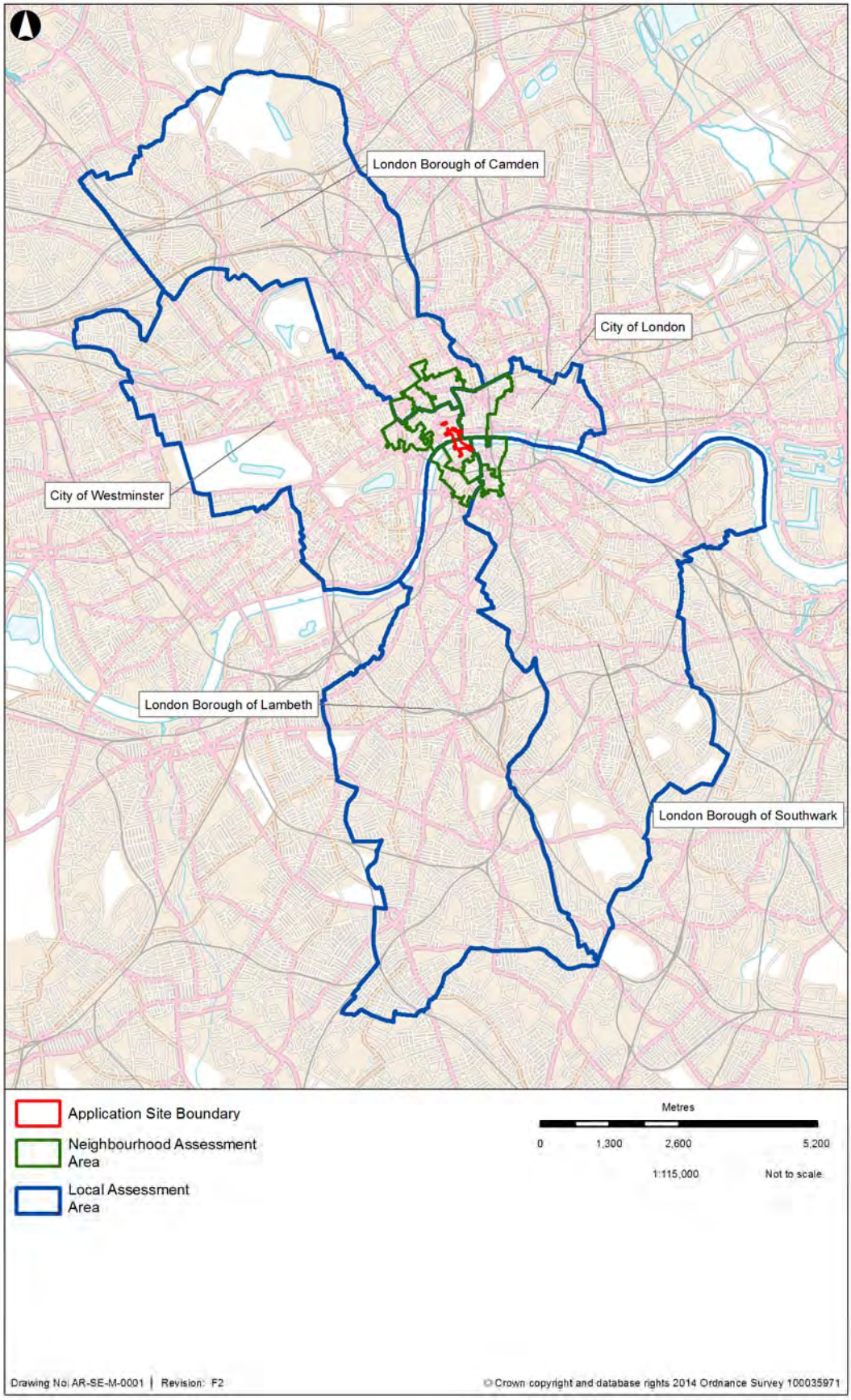

Figure 3.1: Local (Borough) assessment area

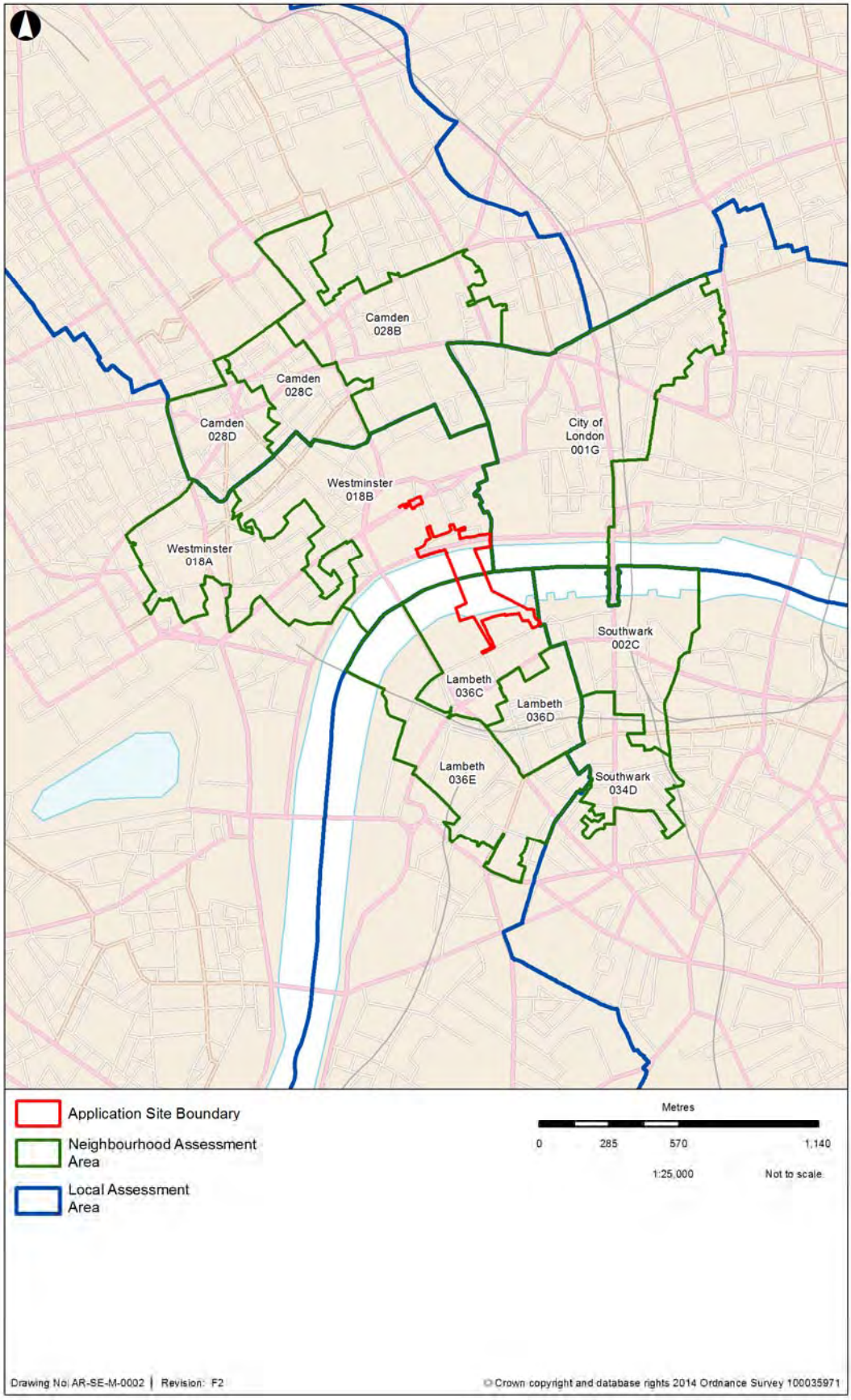

Figure 3.2: Neighbourhood (LSOA) assessment area

3.6.8 These geographies are consistent with both the EqIA and socio-economic assessment of the EIA conducted for the Garden Bridge.

Temporal scope

3.6.9 The temporal scope of the HIA is consistent with other relevant assessments such as the EIA, EqIA and Sustainability Statement.

3.6.10 The scope covers both the construction and the operation of the Garden Bridge and the likely duration of the impacts are identified within the assessment.

Linking health determinants and health effects

3.6.11 Using available literature, including previous health studies and recent research, an evidence base was collated to identify links between the selected determinants and health effects.

3.6.12 Impacts may be direct or indirect and links may be causal or compounding. Key reference material included:

- Government health policies, programmes and strategies;
- Previous HIAs for transport projects;
- Public health reports and research papers from a range of sources, including:
    - Department of Health;
    - WHO;
    - NICE;
    - Health Development Agency; and
    - HUDU.

3.6.13 The full evidence review is provided within Appendix 2 and has been used to inform the assessment of health effects.

Assessment of health impacts

3.6.14 The assessment of potential health impacts is based on the health determinants outlined in the HUDU Tool and encompasses, in general, only qualitative assessment techniques.

3.6.15 Commentary has been provided on how the design of the Garden Bridge has responded to recommendations arising from the HIA.

3.6.16 Where measures have already been identified to mitigate potential impacts, for example through the EIA process or draft Code of Construction Practice Part A, this mitigation is cross-referenced in the HIA.

3.6.17 The qualitative assessment of health impacts describes the nature of the potential impact on the determinant of health and

the direction of change which is classified as positive, negative, neutral or uncertain. Potential changes in health based statistics are not generally quantified, since these have a wide and complex range of contributory factors, many of which are not related to the Garden Bridge.

3.6.18 The assessment also considers the cumulative effects of changes in a number of determinants on a given receptor (i.e. cumulative impacts from changes in the air quality, noise and visual environment on a residential receptor).

3.6.19 Based on the literature review links have been made between the identified impacts on the selected determinants and potential health effects/outcomes.

3.6.20 Health inequalities and the potential for disproportionate impacts on certain vulnerable groups have been taken into account in the assessment.

3.6.21 The exception to the qualitative assessment is the HEAT tool[5] (Health economic assessment tool), created by WHO, which has been used to conduct an economic assessment of the health benefits of the Garden Bridge by estimating the value of reduced mortality that results from specified amounts of walking.

Recommendations

3.6.22 Where impacts have been identified in the HIA, recommendations are proposed to reduce any negative impacts and maximise any positive impacts on health from the Garden Bridge.

3.6.23 Recommendations may include detailed design considerations or recommendations for management practices during the construction and operation of the Garden Bridge.

3.6.24 The responsible organisation(s) and the timing of actions required to implement any recommendations made in the HIA have also been identified.

3.7 Limitations

3.7.1 Literature and baseline data used in the HIA is limited to readily available public and published sources.

3.7.2 City of London Corporation does not have an individual annual health profile because datasets would not be consistent with the other boroughs due to the low population. Therefore, Public Health England combines figures for the City of London Corporation with the London Borough of Hackney. As the combined health profiled for City of London and Hackney was

[5] World Health Organization, Regional Office for Europe (2011). http://www.heatwalkingcycling.org

not felt to be representative of the study area due to the geographical area covered, City of London Corporation data has been excluded from some of the health profile statistics
Synergies with other assessments

3.7.3 The gathering of baseline data has been coordinated with other workstreams and deliverables for the planning application such as the ES, the Equality Impact Assessment (EqIA) and the Sustainability Statement.

3.7.4 The HIA has close links to the EqIA, both in terms of dealing with issues of accessibility and inclusivity and also in terms of any potential health inequalities. The EqIA has also informed the identification of vulnerable groups within the HIA.

3.7.5 The HIA has used assessment outputs from the Garden Bridge EIA including outputs from the transport, air quality, noise and socio-economic assessments to inform the assessment of impacts on health determinants.

4 Community profile summary

4.1 Introduction

4.1.1 This section provides a summary of the character of the communities within the assessment areas likely to be directly and indirectly affected during the construction and operation of the Garden Bridge.

4.2 Demographic profile

Resident Population

4.2.1 The 2011 Census shows that the local assessment area had a resident population of 1,038,478 usual residents which was unequally divided between the five boroughs as shown in Figure 4.3.

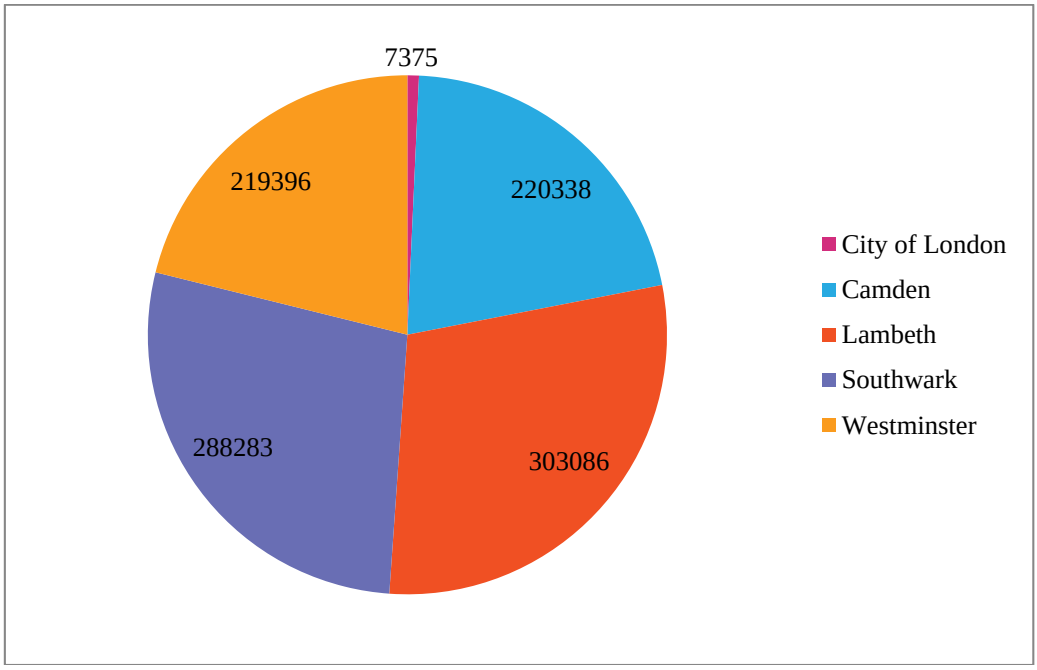

Figure 4.3: 2011 Census population figures for the local assessment areas

4.2.2 The population in the local assessment area (between 2008 and 2012) has increased at much higher rates than the London average (6.4%) particularly in LB Camden (7.0%) and LB Lambeth (7.3%). This population growth in the local assessment area is expected to continue in the future.

4.2.3 The population from the 2011 Census for the neighbourhood assessment area was 18,683 and the geographical breakdown per LSOA is shown in Figure 4.4.

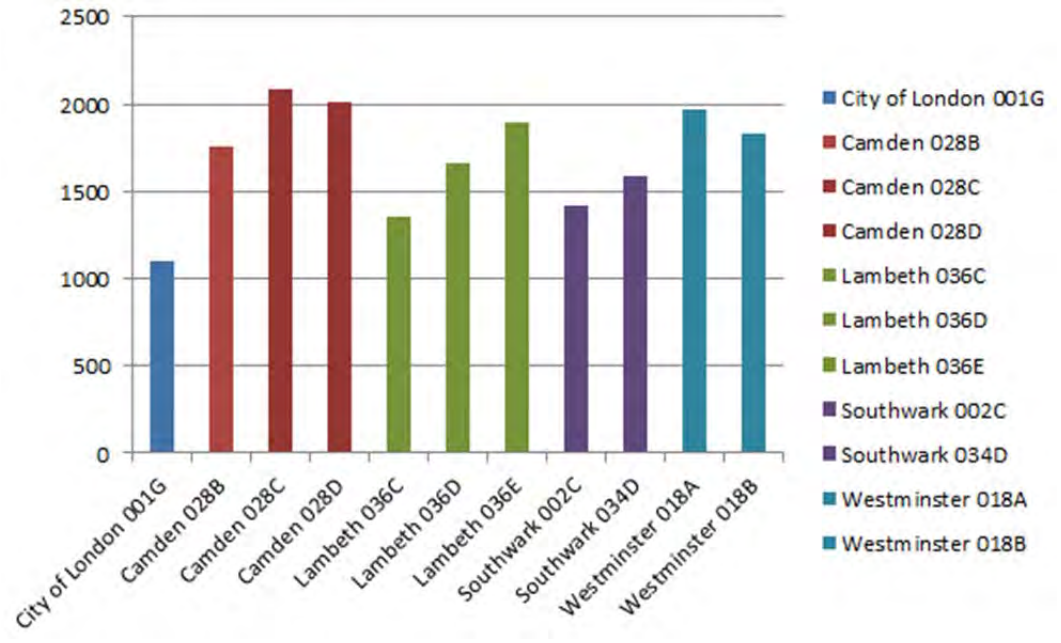

Figure 4.4: 2011 Census population figures for the neighbourhood assessment area

4.2.4 The LSOAs bordering the Garden Bridge site (Westminster 018B, City of London 001G, Lambeth 036C and Southwark 002C) were amongst the least populated LSOAs in the neighbourhood assessment area.

4.2.5 There is a very high population density in the local assessment area at 102 persons per hectare compared with a London average of 52.0 and an England average of 4.1. The population density of the neighbourhood assessment area was comparable to London at 58.0 persons per hectare. This reflects the central location of the neighbourhood with a lower proportion of residential to other uses than elsewhere in the host boroughs.

Daytime Population

4.2.6 Daytime populations in most London boroughs can be dramatically different from the local residential populations due to the influx of workers, visitors and tourists. Table 4.2 illustrates these daytime populations in the five London boroughs that form the local assessment area. Both the total populations and their composition differ considerably across different boroughs.

Table 4.2: Daytime population of London boroughs in the vicinity of Garden Bridge.

		Boroughs				
		London Borough of Camden	**West-minster City Council**	**City of London**	**London Borough of Lambeth**	**London Borough of South-wark**
	Total Daytime Population (includes tourists	527,016	1,017,622	598,141	318,097	462,473
	Workday Population (excludes tourists)	453,872	819,085	446,932	281,529	407,508
Components	In Work (employed)	298,022	633,849	377,795	128,712	187,206
	In Work (self-employed)	38,138	52,644	64,272	19,903	71,028
	Not In Work	74,101	89,896	2,313	76,777	84,458
	Population aged 0-4	13,074	12,817	245	20,887	21,457
	School children aged 5 or over	30,537	29,879	2,307	35,250	43,359
	Overseas staying visitors	18,846	85,332	6,792	6,409	6,154
	Domestic staying visitors	1,038	1,781	7,951	378	208
	Day trip visitors	53,260	111,425	136,466	29,781	48,603
For comparison	GLA resident Population (2012 estimate)	221,828	221,842	7,559	308,141	293,670
	Census resident population (2011)	220,338	219,396	7,375	303,086	288,283
	Census workday population (2011)	384,107	689,572	360,075	274,160	324,494

Greater London Authority (2012) Population during the daytime, by borough.

4.2.7 The statistics in Table 4.2 shows that for most of the London boroughs highlighted, the population increases significantly during the day. The greatest increases are in the City of London where the daytime population increases by 99% over the resident population. The majority of this increase is from workers commuting into the borough, but there is also a significant percentage (25% of the daytime population) that is from tourism and day trip visitors.

4.2.8 The LB Westminster and LB Camden also experience an increase over of over 50% in the daytime population over resident population numbers. With LB Westminster having the highest numbers of ‘overseas staying visitors’ of the five London Boroughs, at 85,332.

4.2.9 According to the GLA's (2007) 'Commuting in London' report (based on 2001 census data); City of London had the highest percentage (99%) of workers who commuted into the borough; followed by City of Westminster (91%); and LB Camden (84%). LB Southwark had the seventh highest percentage (74%); whilst LB Lambeth had the ninth highest percentage (68%).

4.2.10 In terms of areas where this daytime population might be coming from, data from 2001 indicates that approximately 36% of all workers travelled to work in the City of London from Inner London, of which only 7% came from the City of London itself. Of the remaining 64% of the daytime population, around 32% of workers travelled to work in the City of London from Outer London; 27% from the Home Counties; and 5% from other areas[6].

Age profile

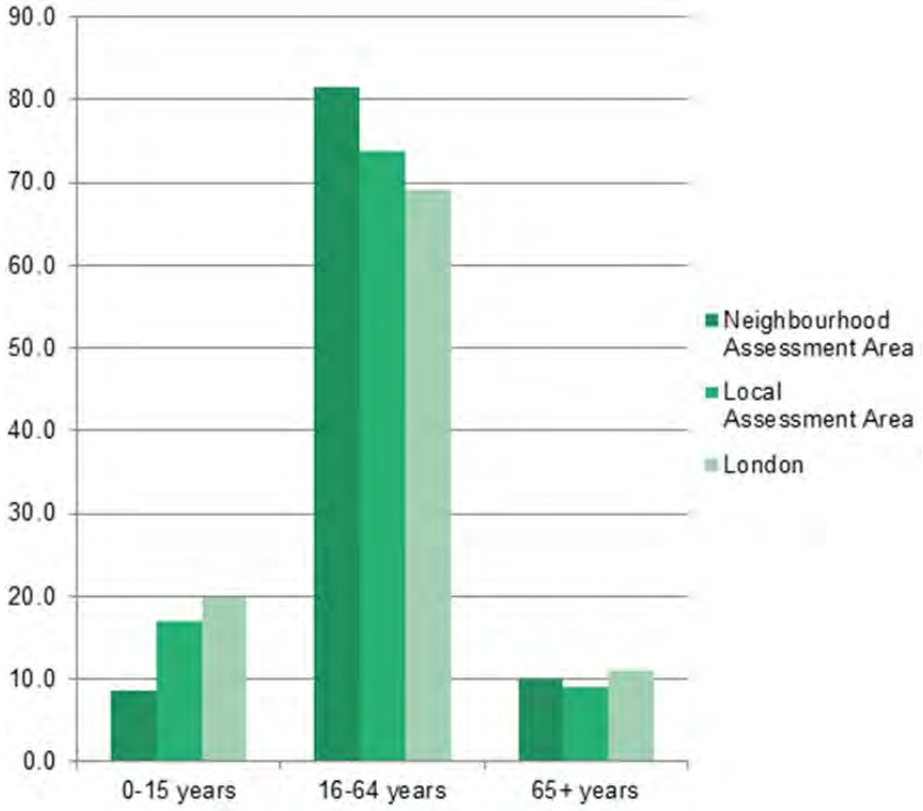

Figure 4.5: 2011 Census age structure of the population

4.2.11 Census 2011 data (Figure 4.5) shows that both the local and neighbourhood areas were characterised by a population that was predominantly of an economically active age (between 16-64 years of age), with much lower proportions of the population

[6] http://www.cityoflondon.gov.uk/services/environment-and-planning/planning/development-and-population-information/employment-and-visitors/Documents/DP_PL_CityofLondonWorkforceTravelSectionBInternet[1].pdf

under 16 years of age and over 65 years of age and in both cases this was lower than the London average. However the growth of both population groups has been occurring at a much higher rate than the previously forecasted increases, particularly in City of London which was 16.7% for under 16 years of age and 10.0% for over 65 years of age between 2008 and 2012. This compares with 7.8% and 6.7% respectively for the London area as a whole. The growth in these population groups in the assessment area is expected to continue in the future.

Ethnic diversity

4.2.12 The 2011 Census shows that ethnic diversity within the local assessment area and neighbourhood assessment area was generally consistent with the London average as shown in Table 4.3.

Table 4.3: Ethnicity (%) at London, local and neighbourhood assessment areas

	White	Mixed/ multiple ethnic groups	Asian/ Asian British	Black/African/ Caribbean/ Black British	Other
London	59.8	5.0	18.5	13.3	3.4
Local Assessment Area	59.4	6.3	11.2	18.4	4.8
Neighbourhood Assessment Area	64.5	5.4	18.0	9.0	3.1

4.2.13 Ethnic diversity levels in the local assessment area are generally consistent with the London average, with a notable population of African and Caribbean and 'other' ethnic backgrounds; and a lower population of Indian, Pakistani and Bangladeshi ethnic groups which contributed to a lower percentage of Asian / Asian British individuals in the local assessment area.

4.2.14 In the neighbourhood assessment area, levels of ethnic diversity are lower than the London average, with the majority of the population being of a white ethnic background. There were also higher number of individuals from Chinese ethnic groups and a lower number of individuals from African and Caribbean backgrounds.

4.2.15 When comparing the ethnicity within the neighbourhood assessment areas some contrasts were evident. To the north of

the River Thames there was a much higher proportion of the population classed as 'White' and 'Asian/Asian British'. There was a much higher proportion of the population from 'Mixed/Multiple ethnic groups' and 'Black/African/Caribbean/ Black British' ethnicity in the LSOAs to the south of the River Thames.

Socio-economic classification

4.2.16 The socio-economic classification provides an indication of the number of individuals in more vulnerable socio-economic groups (see section 4.4 for more information on vulnerable groups).

4.2.17 Furthermore as there was a high proportion of the population of economically active age (16-64 years of age) it can be indicative of economic activity in the assessment area. The population over 16 years of age[7] that are economically active in the local and neighbourhood assessment area compromised 594,832 and 11,143 residents respectively and their economic contribution was classed in the 2011 Census as shown in Table 4.4 below.

Table 4.4: Profile (%) of the population (over 16 years of age) that was economically active in the assessment area

	Employee	Self Employed	Full Time Students	Unemployed
London	70.9	14.4	5.1	9.6
Local Assessment Area	70.9	16.4	4.0	8.8
Neighbourhood Assessment Area	68.2	18.6	5.2	8.0

4.2.18 Employment in the local assessment area was aligned with the London average and employment in the neighbourhood assessment area was slightly higher than the London average.

4.2.19 When comparing unemployment in the economically active population in the assessment area higher levels of unemployment were evident in the boroughs and LSOAs to the south of the River Thames in comparison to the north.

4.2.20 The percentage of the economically inactive population which looks after a family or is long-term sick or disabled was lower in the local and neighbourhood assessment areas in comparison to the London average.

[7] Note: Census 2011 data provided a breakdown of the total population over 16 years of age rather than the normal breakdown of the economically active population which includes those aged between 16-64 years of age.

4.2.21 This means that there were less vulnerable socio-economic groups in the local and neighbourhood assessment areas.

4.2.22 When the occupations of employees from 2011 Census in the neighbourhood assessment area and the local assessment area were compared with London (Figure 4.6) it becomes evident that there was a very high proportion of the employed population in higher managerial, professional and technical occupations in comparison to the London average.

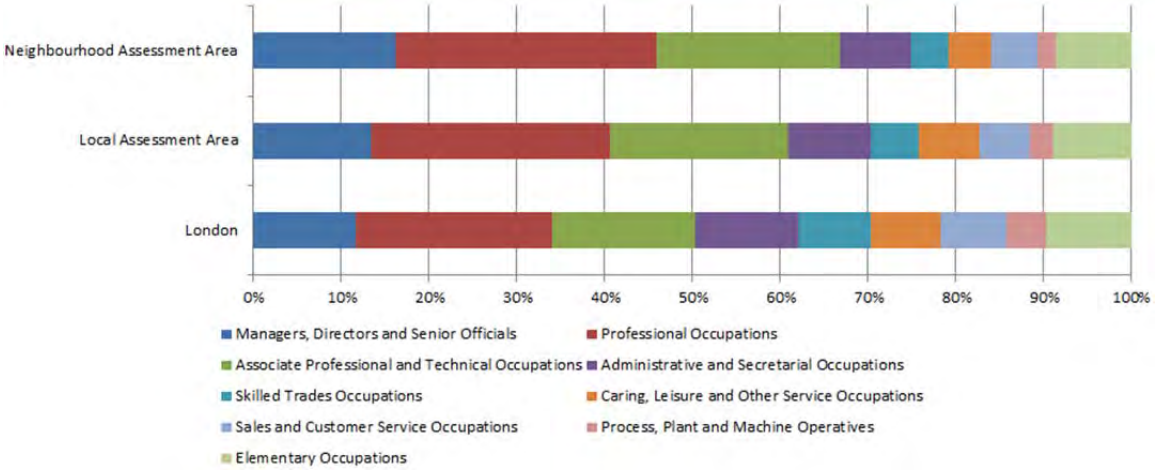

Figure 4.6: Employment by occupation in the local and neighbourhood assessment area

Index of Multiple Deprivation

4.2.23 The English index of multiple deprivation (IMD), 2010, measures relative levels of deprivation at LSOA level, and is made up of seven 'domains' of deprivation (income, employment, health and disability, education, skills and training, barriers to housing and services, crime, and living environment).

4.2.24 The overall IMD score which amalgamates the scores for all seven domains of deprivation varied greatly throughout the local assessment area as shown in Figure 4.7.

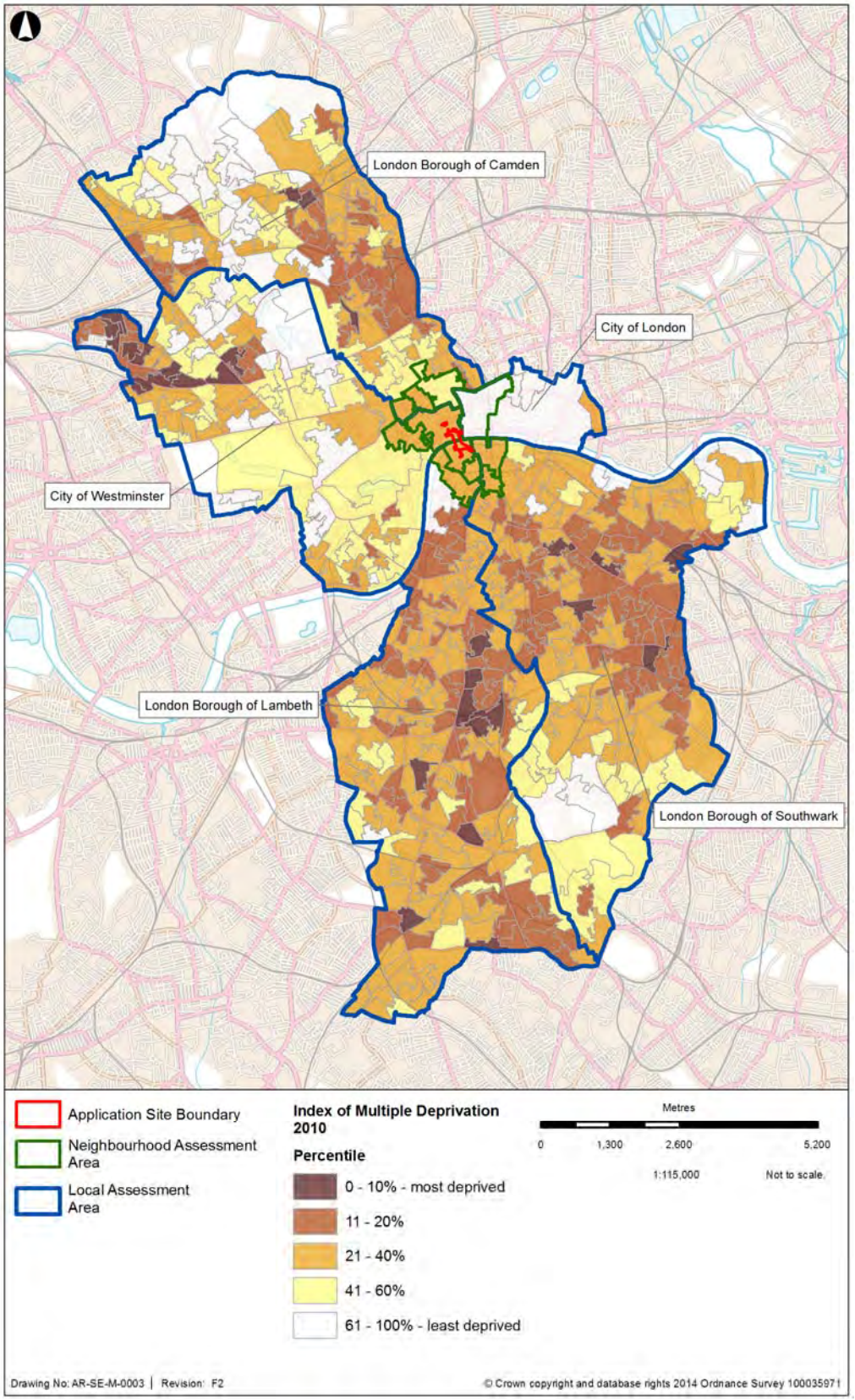

Figure 4.7: Local assessment area Overall IMD 2010

4.2.25 In general north of the River Thames was less deprived than the south of the River Thames however there was a large

variation of deprivation, particularly in LB Camden. To the south of the river Thames deprivation scores were generally within the more deprived percentiles.

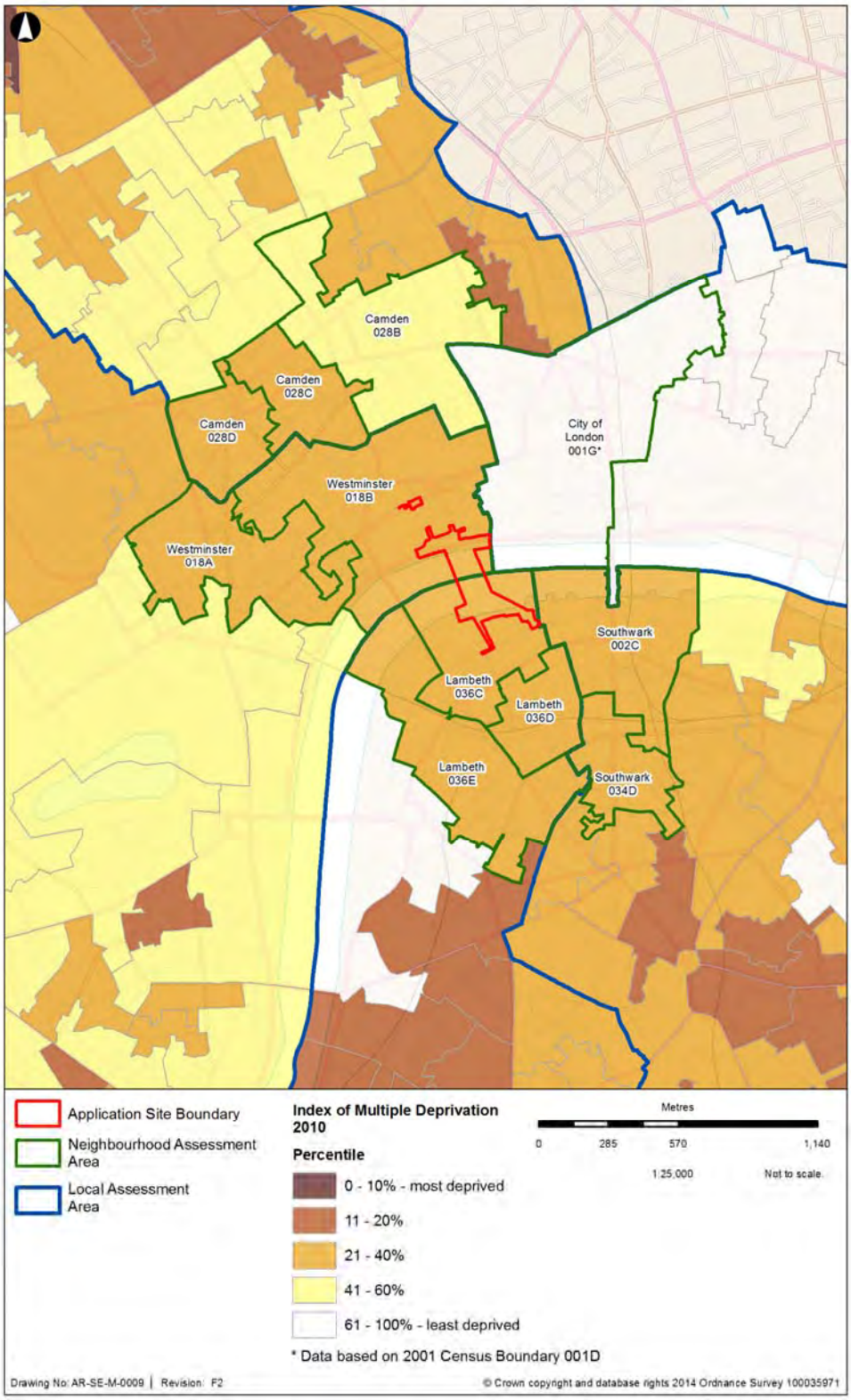

Figure 4.8: Neighbourhood assessment area Overall IMD 2010

4.2.26 Deprivation was average within the neighbourhood assessment area as shown in Figure 4.8. The majority of the LSOAs were within the 21-40 percentile.

4.3 Health profile

4.3.1 Public Health England analyses local authorities in London at the borough level and annually produces health profiles. The profiles help local government and health services to understand the local community needs and priorities and enable a snapshot of health across the borough to be captured.

4.3.2 City of London Corporation does not produce an individual annual health profile because datasets would not be consistent with the other boroughs due to the low population. Therefore, Public Health England combines figures for the City of London Corporation with the London Borough of Hackney. As the combined health profiled for City of London and Hackney was not felt to be representative of the study area due to the geographical area covered, City of London Corporation data has been excluded from some of the health profile statistics as denoted by a * symbol beside the heading.

Self-rated health

4.3.3 Data on self-rated health from the Census 2011 (Table 4.5) indicated that the profile of the local and neighbourhood assessment areas were broadly similar to the London average.

Table 4.5: Self-rated health profile of the local and neighbourhood assessment area in comparison to the London average

	Very good	Good	Fair	Bad	Very bad
London	50.5	33.3	11.2	3.7	1.2
Local Assessment Area	53.5	31.1	10.3	3.8	1.3
Neighbourhood Assessment Area	52.6	31.7	10.6	3.8	1.3

4.3.4 There was generally a much higher proportion of the population rating their health as ‘very good’ or ‘good’ in comparison to those who rated their health as ‘very bad’ or ‘bad’. The numbers rating their health as ‘very good’ are higher than the national average.

IoD health and disability

4.3.5 Health deprivation and disability is one of the seven domains used to determine the overall IMD score mentioned in Sections 4.2.23 to 4.2.26. The domain measures premature death and

impairment of quality of life by poor health. It considers both physical and mental health.

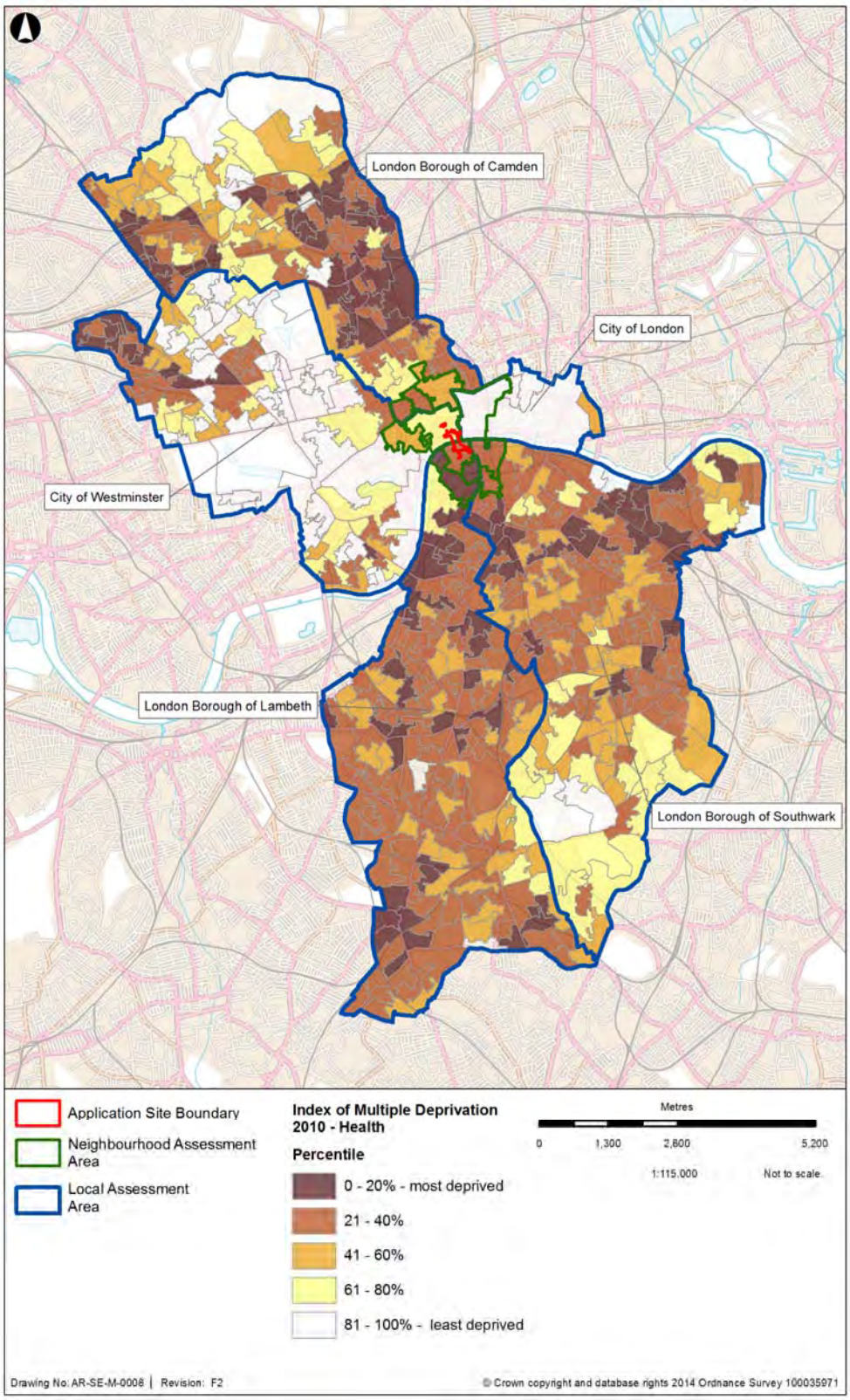

Figure 4.9: Local assessment area health deprivation and disability IoD 2010

4.3.6 In the local assessment area health deprivation and disability was higher to the south of the River Thames as shown in Figure 4.9. There were large inequalities evident within most of the boroughs (with the exception of City of London).

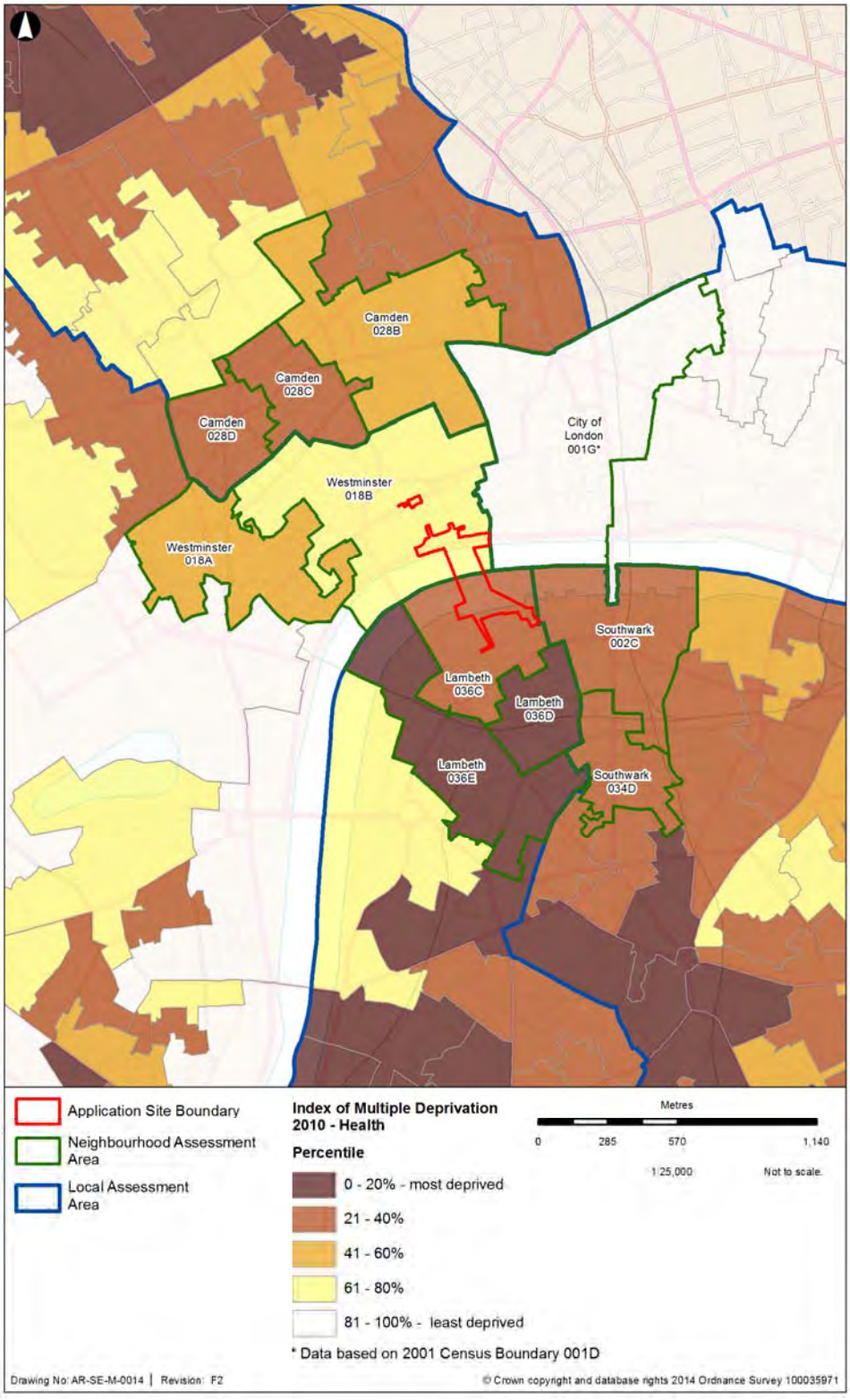

Figure 4.10: Neighbourhood assessment area health deprivation and disability IMD 2010

4.3.7 Within the neighbourhood assessment area health disability and deprivation varied greatly between LSOAs as shown in Figure 4.10.

4.3.8 To the north of the River Thames City of London 001G was within the least deprived percentile, however LB Camden 028D and C were within the 21-40% most deprived. To the south of the River Thames health deprivation and disability was generally higher as all of the LSOAs were all within the top 40% most deprived.

Life expectancy*

4.3.9 Life expectancy in the local assessment area* was generally aligned with London averages during 2009-2011[8]. However life expectancy varied throughout between the boroughs. There was a higher life expectancy north of the River Thames in WCC and LB Camden than south of the River Thames in LB Lambeth and LB Southwark.

4.3.10 There were large variations in life expectancy within the boroughs of the local assessment area as a result of the varying levels of deprivation as mentioned in Sections 4.2.23-4.2.26.

4.3.11 WCC had the greatest inequalities in life expectancy. In the most deprived areas of WCC life expectancy was 16.9 years lower for men and 9.7 years lower for women in comparison to the least deprived areas. LB Camden and LB Southwark also had significant differences in the life expectancy between the most deprived and least deprived areas.

Rates and incidence of disease*

4.3.12 Throughout the local assessment area* all-cause mortality rates have fallen in the last decade[9]. However many of the early death rates were worse than the London average during 2009-2011.

4.3.13 The early death rates in the local assessment area* from heart disease and stroke were generally poor with higher mortality rates from circulatory diseases for persons less than 75 years of age in LB Camden, LB Lambeth and LB Southwark in comparison to the London average.

4.3.14 There were large variations in the early death rates from cancer in the local assessment area*. LB Camden and WCC have lower mortality rates from all cancers for persons less than 75 years of age in comparison to the London average whilst LB Lambeth and LB Southwark had significantly higher rates.

[8] ONS, Life expectancy at birth 2009-2011.
[9] Public Health England. Health profiles 2013.

Disability Living Allowance

4.3.15 Disability Living Allowance (DLA) is payable to people who are aged under 65 years, are disabled and who have personal care needs, mobility needs, or both.

4.3.16 Analysis of Department of Work and Pensions datasets[10] show that there was a significantly higher proportion of the population in the neighbourhood assessment area (4.6%) who were DLA claimants in comparison to the local assessment area and London (both of which were 0.05%).

4.3.17 This would be a particularly important issue to consider in ensuring that the Garden Bridge is accessible for this segment of the local population.

Physically active adults*

4.3.18 The estimated percentage of the population in the local assessment area* who participate in physical activity was higher than the London average[11].

Road injuries and death*

4.3.19 Road injuries and death in the local assessment area* were significantly worse than the London average. During 2009-2011 there were on average 625 killed or seriously injured casualties within the local assessment area.

Healthy eating and obesity*

4.3.20 Healthy eating is a key characteristic within the local assessment area*. The prevalence of healthy eating was higher than the London average, particularly in LB Camden and WCC[12].

4.3.21 Furthermore the prevalence of obesity in adults in the local assessment area is lower than the London average, with the exception of LB Southwark. However obesity amongst children was higher than the London average.

Mental wellbeing*

4.3.22 The Census 2011 data indicates that levels of mental wellbeing in the local assessment area are slightly worse than the London average.

4.3.23 When specific distinctions for mental wellbeing according to hospital admissions and mortality rates were examined LB Camden had the worst indicator scores in all cases.

[10] Department of Works and Pensions (2011). Disability Living Allowance.
[11] Public Health England. Health profiles 2013.
[12] Public Health England. Health profiles 2013.

4.3.24 For the local assessment area* the standardised number of emergency hospital admissions for intentional self-harm was lower than the London average[13].

4.3.25 However, the mortality rate for intentional self-harm and undetermined injury (whether accidentally or purposely inflicted) was higher throughout the local assessment area* than the London average.

4.4 Vulnerable groups within the community

4.4.1 The following groups within the study area have been identified as being particularly vulnerable to adverse health effects (see health evidence base, Appendix 2 for references to literature sources):

- **Ethnic minority groups:** Many of the Capital's ethnic minority communities suffer elevated levels of poverty, violence, unemployment and ill health. Most of London's ethnic minority groups are likely to experience unemployment rates at twice the national average, with direct impacts upon wealth and socio-economic class[14]. Those in high-risk groups for poverty are also more likely to suffer health problems. The community profile shows that although ethnic diversity is low within the study area, there are notable populations of African Caribbean, and Chinese ethnicity within the study area.
- **People with disabilities:** People with disabilities often lack the mobility to access services outside the local vicinity and rely more heavily on access to reliable public transport services. The community health profile indicates that there was a significantly higher proportion of the population in the neighbourhood assessment area who were DLA claimants in comparison to the local assessment area and London.
- **Low-income / low socio-economic groups:** Differences in social grade are linked to health inequalities. Often the poorest people experience the poorest quality outdoor environments[15] and suffer disproportionately from a lack of equitable access to ecology and green spaces They are also less likely to own their own transport and therefore suffer disproportionately from poor access to services and facilities and a lack of public transport.
- **Elderly:** The elderly are particularly at risk of social exclusion[16]. Poor mobility and a greater reliance on public transport can make it more difficult for the elderly to access

[13] Public Health England. Health profiles 2013.
[14] www.london.gov.uk
[15] WHO (2012) Addressing the social determinants of health: the urban dimension and the role of local government
[16] Wanless.D, (2003). 'Securing good health for the whole population'. Population Health Trends. HM Treasury/Department of Health.

health and social services, shops and community facilities. The elderly are also more likely to suffer from the detrimental health effects associated with poor environmental conditions such as dust and noise impacts associated with construction. The community profile confirms that although numbers in the over 65 age group are relatively low compared with the London average, this is a rapidly growing group in the study area (see paragraph 4.2.11).

5 Assessment of health outcomes and recommendations

5.1 Access to open space and nature

Introduction

5.1.1 This section considers the potential effects on health from changes in access to open space and nature associated with the construction and operation of the Garden Bridge.

5.1.2 This topic is concerned with:

- Opportunities for physical activity;
- Access to open and natural space;
- Formal and informal outdoor play spaces;
- Maintenance of open space and sports facilities; and
- Integration with outdoor uses such as food growing.

Existing conditions

5.1.3 Greenspace information for Greater London (GiGL) data (2012)[17] maps access and deficiency of open space based on local parks and open spaces, small open spaces and pocket parks. Access and deficiency is based on the maximum distance which people should have to travel to access these spaces.

5.1.4 The maps show that there was a high prevalence of areas of deficiency in the immediate surroundings of the proposed Garden Bridge. The Garden Bridge therefore is a great opportunity to bring more green space provision to an area in which it is currently lacking.

5.1.5 Three open spaces are located within the red line boundary:

- On the north bank of the River Thames, Temple Gardens lie within the northernmost part of the development site.
- On the south side of the River Thames the green area of The Queen's Walk runs along the South Bank between Westminster Bridge and the Millennium footbridge. In the location of the proposed development there is a grassed area of land between The Queen's Walk and ITV Studios. It is set slightly back from the edge of the River Thames and is leased by the Coin Street Community Builders. This land and the riverside footway in front of it, which has a number of benches, provide a shaded seating area where people can rest.

17 http://www.gigl.org.uk/our-data-holdings/open-spaces/public-open-space-categories/

- Also on the south side of the River Thames and to the southeast of the site, nestled in between Oxo Tower Wharf and Gabriel's Wharf, lie Bernie Spain Gardens. In summer the Bernie Spain Gardens are home to the Coin Street Festival, a season of free culturally themed events. Bernie Spain Gardens can also be hired for other events.

Impact Assessment

Construction phase

5.1.6 Construction activities, including traffic movements and associated noise, dust, vibration and visual impacts have the potential to affect the setting of and people's enjoyment of those open spaces that lie in close proximity to the site. The majority of construction impacts should be minimised through the effective implementation of mitigation measures as outlined in the draft Code of Construction Practice Part A.

5.1.7 The south landing point of the Garden Bridge will result in the removal of the area of grassed open space leased to the Coin Street Community Builders on the southern edge of The Queens Walk. This space is likely to be used by local people, office workers, day-trippers and tourists, at lunch-time and for relaxation, especially in the summer months.

South Access A:

5.1.8 South access A would result in the temporary loss of part of The Queen's Walk.

South Access B:

5.1.9 Impacts during construction would be felt on users of the Bernie Spain Gardens, to the east of the proposed development, as a result of the use of these gardens as a construction access route. The use of these Gardens would result in a loss for a period of up to approximately three years. Although the southern half of the Gardens which lie to the south of Upper Ground would remain usable, the loss of approximately 50% of this green space in an area deficient in access to open space would be a considerable loss to the local community. The loss may also impact on tourists, who are also likely to use the Gardens. Impacts would be likely to be greatest during the summer months when the site is currently used for events and demand for outside space is greatest.

5.1.10 South access B would also result in the temporary loss of part of The Queen's Walk.

Maximum river option:

5.1.11 For the duration of construction, the open space on The Queen's Walk would be reduced adjacent to the south landing worksite and a crash deck would be in place over the walkway

that would remain. For some periods of construction, temporary closure of part of The Queen's Walk would also be required.

5.1.12 Access to open space at Bernie Spain Gardens would be maintained throughout. When The Queen's Walk is closed, pedestrians would be diverted through Gabriel's Wharf and Bernie Spain Gardens to Upper Ground.

Operational phase

Enhancing open space

5.1.13 During operation, the Garden Bridge has the potential to greatly enhance the existing amenity value of both the South Bank and Temple by providing a publicly accessible green space that links these two existing areas of existing open space.

5.1.14 The Garden Bridge would provide a quality recreational space that includes places where people can meet or dwell. Seating/benches would be associated with these dwell spaces to allow those with mobility impairments, including those with disabilities and the elderly to enjoy them.

5.1.15 Provision of a range of seating options to meet the needs of the disabled, elderly and children was a key design consideration raised through the HIA process. This has been addressed in the design through a range of seating configurations to create an accessible environment where the provision of choice will allow individuals to sit on their own or to gather as groups.

5.1.16 General provision of seating has been provided in excess of BS8300 'Design of buildings and their approaches to meet the needs of disabled people: Code of practice' (section 5.1), which requires rest points at every 50m (typically circa 20m with maximum 30m spacing).

5.1.17 The strategy for seating design will accommodate a range of heights, with contours in the seating surface to act as back-rests and armrests to help people lower themselves into the seat and to stand up.

5.1.18 Post-construction, Bernie Spain Gardens would be fully remediated and would provide the same standard of open space as is currently available.

Children and young people

5.1.19 The Garden Bridge design creates intimate spaces with a connection to nature, providing a very rich and stimulating natural environment. The creation of interactive play-spaces as part of the design is not seen as being sympathetic to this intention.

5.1.20 The Garden Bridge Trust could incorporate small scale measures or temporary educational activities, festivals or events aimed towards children and young people during the

operational phase of the Garden Bridge. A number of recommendations for howThe Garden Bridge Trust could enhance the offering for this age group are provided in the recommendations section below.

Equality of access

5.1.21 Access is free to all thus minimising health inequalities and making the resource available to all, including vulnerable groups such as the disabled, young, elderly, and unemployed. Issues of accessibility are particularly important in terms of providing benefits for the local community as the data (4.3.16) shows that the neighbourhood assessment area has a higher proportion of DLA claimants than the London average.

5.1.22 A strategy to assess accessibility options (e.g. interaction of edges, planting, and maintenance requirements) was progressed by the design team, with input from the HIA team, to find a solution to meet design and accessibility requirements.

5.1.23 Step-free access, in the form of a pair of lifts would be provided at both ends of the bridge (a lift and ramp combination would be provided at the north landing). Work has been undertaken by the projects EqIA team and with the TfL equality and inclusion officer on the benefits of lifts compared to ramps for enabling those with mobility impairments to access the bridge. The study concluded that PLA height clearance requirements have governed the height of the final bridge deck. This means that the length of any compliant ramp required to access the Garden Bridge from the ground to the bridge deck, might in itself become a barrier to accessibility to the groups it would be intended to help and therefore lifts are likely to be the preferable option. Lifts would be sized as 17-person lifts allowing for a combination of wheelchair user and standing passengers. Lifts are ‘through-lifts’ in order to avoid the need for wheelchair users to either turn-around of back out of lift entrances.

5.1.24 At the south landing lifts provide direct access from The Queen’s Walk to the bridge deck. At the north landing lifts are provided from the Bridge deck to the roof of Temple LU station building and a new ramp and stairs from the roof to street level. This is due to constraints around the integration of new lifts within the ticket hall of Temple LU Station. A separate Step-Free Access and bridge lift integration study has been commissioned by TfL but does not form part of this submission at the present time. The bridge lift has however been located to enable such an extension to occur in the future.

5.1.25 The primary pathways across the Bridge would be a minimum of 4m wide, to allow two wheelchairs to pass each other. Some secondary pathways will also be accessible, although due to space constraints and the need to balance quantity of garden space, with quantity of hard paving, not all pathways will meet the highest accessibility standards.

5.1.26 Levels have been carefully reviewed to provide 1:21 gradients from bridge stairs to piers with a shallower 1:60 gradient from one pier to the next. The need for handrails has therefore been avoided (in line with Part M of the Building Regulations and BS 8300 requirements).

5.1.27 The ability for the partially sighted and independent users to safely navigate the Garden Bridge has been an on-going concern for the design team. Numerous discussions have revolved around finding the balance between achieving the character of an informal “garden”, and providing the more usual cues encountered in civic spaces and infrastructure projects.

5.1.28 The underlying concept of the Garden Bridge is founded on a radial geometry which provides part of its character and follows through from structure to surface finishes. This lends itself to a pathway with a staggered edge rather than a continuous straight edge. Proposals to address the needs of the partially sighted have included options for creating colour contrast and textured surfaces that define the edge of the primary walking zone.

5.1.29 A detailed matrix of hard-landscape materials was reviewed. Brick was chosen for the main pathway routes for a number of reasons, including ease of repair and replacement of a modular material, and for the high colour contrast possible between red terracotta. This would be edged with a wide strip of gravel. On-going consultation with the Royal National Institute of Blind People (RNIB) has confirmed that the current path edge for the main pathway routes will be legible due to the colour and tactile contrast between the terracotta brick, the gravel strip and the contrast with the green planting.

5.1.30 Secondary paths would be treated with some sort of architectural concrete finish with stone/brick insets that would provide sufficient tactile and visual contrast between the junction of the primary and secondary paths. The RNIB were comfortable with the visual and tactile contrast.

5.1.31 Tactile paving at changes in level (tops and bottoms of ramps and stairs) have been provided for all in accordance with the recommendations of BS 8300. The ramp to Temple LU Station roof is to be provided with colour contrast granite (light-grey and dark-grey) to provide clear visual contrast between ramped inclines and level landings.

5.1.32 A three-dimensional (3D) relief model is proposed at each landing point. This would allow those with impaired vision to physically understand the form and geometry of the bridge before traversing it. This would also inform people that the scheme is for pedestrian use only, so that people can use the scheme confident of the fact that there would be no conflict between users. Lighting has been designed so that it does not have an effect on those with light sensitive disabilities. Lighting

lux level targets have been set and agreed through dialogue with Designing Out Crime officers. A number of lighting options were explored including column mounted lighting, catenary lighting and the finally agreed approach of bollard lighting which was seen to be most responsive to the garden setting. The proposed lighting strategy has been discussed with the RNIB.

Assessment of health effects

5.1.33 Based on the health evidence review it is considered that temporary impacts of construction activities on the access to and enjoyment of open spaces may potentially have some short to medium term negative effects on the mental wellbeing of those most directly affected.

5.1.34 Local people and office workers are likely to be the most adversely affected due to prolonged exposure to effects. Tourists are less likely to experience negative health effects due to the limited nature of their interaction with these spaces.

5.1.35 At the operational phase effects on mental wellbeing are considered to be positive due to an increase in the quantity of high quality open space provided by the Garden Bridge. A study by Greenspace London[18] identified that 'quality of greenspace is an important determinant of green space use'. Such positive benefits for mental health are considered to be particularly valuable to the local community which currently experiences levels of mental wellbeing that are slightly worse than the London average (4.3.22).

5.1.36 Effects on health are assessed to be qualitative, as it would be difficult to determine a direct link between positive mental and physical health effects and access to green space.

Recommendations and monitoring

5.1.37 The following recommendations respond to the need to further reduce any residual negative impacts on health or to maximise any potential opportunities to improve health outcomes as a result of changes in access to open space.

Construction

5.1.38 On-going monitoring of Code of Construction Practice measures should be undertaken to ensure that they have been effective in mitigating potential impacts in relation to traffic, dust, noise and vibration impacts on adjacent open spaces such as Temple Gardens and Bernie Spain Gardens.

5.1.39 Any temporary footway diversions during construction should be fully accessible.

[18] Croucher, K., Myers, L., and Bretherton, J. (2007), The links between greenspace and health: a critical literature review, Greenspace Scotland

Children and young people

5.1.40 A number of potential measures have been identified for future implementation by The Garden Bridge Trust to enhance the value of the Garden Bridge for children and young people:

- Involve the community, particularly children in planting. The boroughs open space strategies generally promote the development of community gardens as an important resource for the community in providing a space for active learning that is accessible to all.
- Consider incorporating interest on the Garden Bridge for young children i.e. information boards, interactive displays, or a nature trail. This could be achieved through the installation of discreet boards that blend into the natural environment but that mark out a trail or provide educational information. These could be located either on the Garden Bridge itself or on the landing points at either end. Themes could include:
  - History of the River Thames.
  - Information on the plant species on the Garden Bridge.
  - Information on climate change and the impacts on the River Thames and flooding; or the impacts of climate change on the plant species seen on the bridge.

  The 'Children and Young Persons Plan(s)' for all five boroughs highlight the health needs of children and young persons in the boroughs, including knowledge sharing; and the LB Southwark Core Strategy, 'Policy 4: Places for learning, enjoyment and healthier lifestyles' seeks provision of educational opportunities and facilities that encourage physical activity and promote healthier lifestyles
- Consult with local children, to find out what they would like to see on the Garden Bridge, through a community consultation event or through chairing a meeting at a local community group / club or youth centre. NICE policy PH17 recommends involving children and young people in consultation.
- Consider opportunities for incorporating informal play for children, either on the bridge or at or near the landing points. NICE Public Health Guidance policy PH17 provides guidance on promoting physical activity for children, as does the GLA's 'Shaping Neighbourhoods: Play and Informal Recreation' SPG.

Equality of access

5.1.41 As the Garden Bridge is intended to be a destination as well as a piece of transport infrastructure, further consideration should be given to issues around use by young children and the disabled such as provision of accessible toilets, baby change and breastfeeding facilities. Such provision could be provided

within the proposed southern landing point where a new building is planned.

5.1.42 The Garden Bridge Trust should also consider use of the Garden Bridge for 'green gyms' - where GPs refer patients for gardening. All of the boroughs open space strategies generally promote the development of community gardens as an important resource for the community in providing a space for active learning that is accessible to all.

5.2 Accessibility and active travel

Introduction

5.2.1 This section considers the potential effects on health as a result of accessibility and active travel associated with the construction and operation of the Garden Bridge.

5.2.2 This topic is concerned with:

- Streetscape;
- Opportunities for walking and cycling;
- Access to public transport;
- Minimising the need to travel;
- Discouraging car use; and
- Road traffic injuries.

Existing conditions

Pedestrian conditions

5.2.3 On the north side of the River Thames, Victoria Embankment runs alongside the River Thames. The footway runs alongside the busy A3211 and is under-utilised by pedestrians.

5.2.4 On the south side of the River Thames, The Queen's Walk on the South Bank is a well-used pedestrian route that links Waterloo LU Station, the London Eye and the Royal Festival Hall to the west, passing the main attractions of the South Bank to connect with Gabriel's Wharf and Bernie Spain Gardens to the east and beyond to Shakespeares Globe and Borough Market.

5.2.5 A review of visitor numbers on adjacent bridges as part of the Garden Bridge, demand forecast work has identified that Waterloo Bridge and Blackfriars Bridge, which both carry pedestrian and traffic flows, have a maximum weekday flow of pedestrians of around just over 10,000 and just under 20,000 respectively. For both these bridges, pedestrian flow numbers are greatest in the week with two definite peaks around the morning and evening commute times and numbers decrease at weekends indicating that these bridges are predominantly used by commuters.

5.2.6 For the nearest pedestrian only bridges, which are Hungerford Bridge to the west and the Millennium footbridge to the east, maximum weekday pedestrian flows tend to be significantly higher at around 25,000 and 23,000 respectively. Pedestrian flows are also much greater on a Saturday, with peaks around lunch-time, indicating that these bridges are likely to be greatly used by tourists and day-trippers.

5.2.7 A series of pedestrian count surveys on Victoria Embankment and the South Bank identified that weekday pedestrian flows were about two times greater along the South Bank than along both footways along Victoria Embankment. For both Victoria Embankment and the South Bank, flows were greater in the PM peak (17:00-18:00) than the AM peak (08:00 – 09:00). Flows were also heavier on Saturdays, with pedestrian flows along the South Bank on a Saturday afternoon (16:00-17:00) being nearly three times higher than weekday PM flows, suggesting that the South Bank is heavily used by tourists and day trippers at the weekend.

Cyclists

5.2.8 A new Barclays Cycle Superhighway is proposed to run along the Victoria Embankment, past the northern landing for Garden Bridge. The route is expected to open in 2016 and planned to run for more than 15 miles through the western suburbs, central London and Barking on a segregated cycle track.

5.2.9 National Cycle Route (NCN) 4 currently runs along Upper Ground to the south of the study area.

5.2.10 There are many Barclays Cycle hire docking stations in the vicinity of Garden Bridge. The closest are:

- Somerset House and Victoria Embankment docking stations on the north bank of the River Thames; and
- Belvedere Road and Milroy Walk docking stations on the south side of the River Thames

5.2.11 Figure 5.11 below shows the locations of the nearest Barclays Cycle hire docking stations in close proximity to the proposed Garden Bridge, as well as providing information on the numbers of docking stations available at each location.

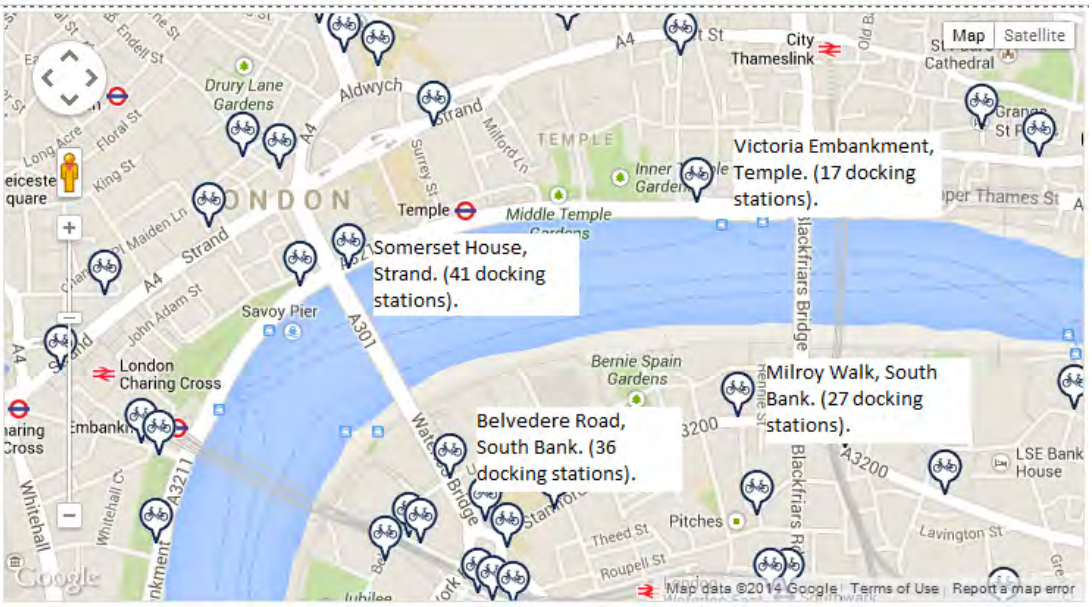

Figure 5.11: Location of Barclays Cycle Hire docking stations.

Road Traffic Injuries

5.2.12 The Garden Bridge Transport Assessment states that in the most recent three year period (up to July 2013) 143 accidents occurred in the vicinity of the north bank site. The majority of these were 'slight' and none were fatal. The majority of accidents occurred at the 'New Bridge Street / Queen Victoria Street/ Blackfriars Bridge / Victoria Embankment off-slip' (25), the 'Blackfriars Bridge / Victoria Embankment on-slip' (20) and the Victoria Embankment / Temple Avenue junction (14).

5.2.13 In the vicinity of the south bank site, there were 95 accidents over the same period. Again, most were 'slight', but one was fatal. The majority of accidents (17) occurred at the 'IMAX roundabout between Stamford Street arm and Waterloo Road arm', the 'Blackfriars Road / Southwark Street / Blackfriars Road / Stamford Street' junction (15) and 'Waterloo Bridge north-west of IMAX roundabout'(13).

5.2.14 The most common contributory factors to the accidents were as follows:

- Passing too close to cyclist or pedestrian;
- Failed to look properly;
- Careless/ reckless/ in a hurry;
- Poor turn or manoeuvre;
- Disobeying road markings or traffic signals;
- Sudden braking;
- Failed to judge other person's path or speed;
- Following too close;

- Impaired by alcohol; and
- Vehicle door opened or closed negligently.

Public transport links

5.2.15 Temple LU Station lies at the northern landing of the proposed Garden Bridge. This station does not currently have step-free access.

5.2.16 At the southern end of the bridge, Waterloo LU Station, approximately 500m to the south-west has step-free access to the trains. There is also access to main line train services at this station. A step-free 'walking' route is available from the South Bank to Waterloo LU Station. Step-free access to the trains is also available at Southwark LU Station which lies approximately 600m to the southeast of the proposed Garden Bridge site.

5.2.17 Bus stops are located on both sides of Victoria Embankment, within 20m of Temple LU Station. On the south side of the River Thames, the nearest bus stops are on Upper Ground, Stamford Street and Waterloo Bridge.

5.2.18 The nearest ferry stops are located approximately 400m west of the study area at Festival Pier on the south bank of the River Thames and approximately 500m east of the study area at Blackfriars Millennium Pier on the north bank of the River Thames.

Impact Assessment

Construction Phase

5.2.19 The addition of construction related traffic, including an increase in HGV movements on local roads, may discourage some people from undertaking active travel journeys as a result of increased concerns about perceived road safety.

5.2.20 Current construction information indicates that during the peak period of construction it is expected that approximately 145 HGVs per day would access/egress the construction sites - this equates to approximately 290 HGV movements per day.

5.2.21 Of the 145 construction vehicles it is estimated that they would be equally split between the north and south landings. This equates to approximately 73 construction vehicles per day at the north landing and 73 at the south landing (146 movements at each site). Assuming that 10% of movements occur during the peak hours this approximates to eight vehicles (16 movements) at each landing site occurring during the peak period.

5.2.22 The main construction traffic routes would be along Victoria Embankment and Temple Place on the north side of the river and along the eastern section of Stamford Street, Hatfields and Upper Ground on the south side of the river. The route along

Upper Ground would directly affect NCN 4 which currently runs along this road.

5.2.23 However, construction traffic impacts should be minimised through measures outlined in the draft Code of Construction Practice Part A and associated traffic management plan, including:

- Maintain and restore the highway to its existing condition to the approval of the relevant Local Authority;
- Measures to provide for road safety for the public and construction staff during traffic management and temporary traffic control measures
- Procedures for driver training;
- Ensure that all construction vehicles bear prominent signage and have an external warning device to warn cyclists of the dangers of passing the vehicle on the inside;
- Ensure that all lorries which are fitted with appropriate equipment to warn the driver of the presence of cyclists passing the vehicle on the inside;
- In the event of a collision investigate the collision and provide a Collision Report;
- Liaise with the relevant Local Authorities/ TfL to determine any need for route signage for construction vehicles and provide such signage as agreed;
- Ensure that adequate signage to warn cyclists and pedestrians of the presence of large construction vehicles is prominently located at site access points and on construction vehicle routes between the site and the strategic network;

5.2.24 Detailed site specific traffic management measures would be included in the Code of Construction Practice, Part B that will be produced in conjunction with the contractor, once they are on board.

5.2.25 At the north landing, pedestrian diversion routes would be in place to move people to the northern footways to avoid crossing Temple Place and any interaction with construction vehicles as far as possible.

5.2.26 Surrey Street's traffic direction would be reversed to northbound only during construction and a new give-way junction would be provided at the junction of Strand / Melbourne Place to enable traffic to use the Aldwych to head east (this would otherwise be not possible with the proposed changes).

5.2.27 At the south landing, two land access options are currently proposed.

- Construction access option A would maintain pedestrian access along The Queen's Walk during construction.

Adjacent to the south landing worksite this would be enclosed by a crash deck for the duration of construction to maintain the safety of the passing public. Access between the ITV Studios and IBM building would be closed to pedestrians. Measures have been included in the draft Code of Construction Practice Part A in relation to provision of reasonable pedestrian routes.

- Construction access option B would close part of The Queen's Walk and pedestrians would be diverted along the eastern edge of Bernie Spain Gardens and along Upper Ground. Although routes between Waterloo and Southwark would be maintained, the distance for pedestrians to travel would be slightly longer.

5.2.28 The draft Code of Construction Practice Part A requires the contractor to ensure that reasonable pedestrian routes would be provided throughout the construction period including consideration of accessibility, signage, width and height and barriers. Effects on access and severance from construction would therefore not be significant.

Operational Phase

Pedestrians

5.2.29 The Garden Bridge not only links the areas immediately north and south of the River Thames, but also links the South Bank to points of interest/tourist attractions to the north of Temple, including Covent Garden. By virtue of the Garden Bridge being pedestrian only, it will inherently prioritise and encourage walking. This will improve the ease with which tourists can make active travel journeys between London's tourist destinations. It should also increase the number of active travel journeys that are undertaken by local people wishing to access facilities and services on the other side of the River Thames; and by commuters wanting to travel from transport hubs to office locations on opposite sides of the River Thames.

5.2.30 Demand forecast modelling work undertaken by Arup has forecast that:

- The projected number of annual visitors to the Garden Bridge is likely to be in the region of 5 to 8 million.
- Peak weekday flows are likely to be 27,000, with peak Saturday flows reaching 30,000.
- Maximum occupancy on the bridge due to safety constraints is 2,500 at any one time.
- At peak times (Peak Saturday in the summer) maximum occupancy on the bridge will range from an average of 1,400 to a peak forecast of 1,700 people on the bridge at any one time (based on a 10 minute dwell and a five minute walk).

- Not all journeys will involve crossing from one side of the bridge to the other and occupancy on the bridge accounts for dwell time as well as U-turns (i.e. people entering and exiting the bridge from the same side). It has been assumed that between 30-50% of people visiting the bridge from the south will make a U-turn before reaching the north landing, and departing via the South Bank.

5.2.31 An analysis of the estimated economic benefits of walking, as a result of the operation of the bridge, has been undertaken using the WHO HEAT. A summary of the assessment methodology, inputs to the model and outcomes is provided in Appendix 5. The model concluded that the Garden Bridge would prevent 0.37 to 0.70 deaths per year, giving a current value of total benefit of between £12,131,000 and £23,078,000 over the thirty years of the appraisal period.

5.2.32 Step-free access signage, which was an initial design consideration raised through the HIA process, has been incorporated into the design of the Garden Bridge. Signage providing information on local amenities and onward travel would be incorporated at the north and south landings, and is likely to include:

- locations of public and publicly accessible toilets (including those with provision for wheelchair users);
- onward travel directions for visitor attractions and sites of interest, including step-free routes;
- Onward travel directions for local transport connections,
- Onward travel directions for step-free access transport links

5.2.33 Existing Legible London signage will be modified to incorporate directions to Garden Bridge.

Cyclists

5.2.34 While the possibility of creating a bridge that would allow cycling connection has been considered it has been discounted for a number of reasons including:

- adequate provision for cyclists on other bridges;
- lack of connecting routes to the Garden Bridge e.g. cycling is discouraged by the South Bank Employers' Group (SBEG) along The Queen's Walk; and
- potential problems caused by mixing high levels of pedestrians with cyclists

5.2.35 Cyclists may wheel a cycle across the bridge. Provision for cyclists will however be made by the following:

- subject to stakeholder agreement, cycle parking hoops would be provided in front of the King's College building on Victoria Embankment adjacent to the western end of Temple

Place. These would provide for onward cycling opportunities, facilitate active travel journeys and link to the proposed Barclays Cycle Superhighway on Victoria Embankment;

- additional cycle parking would be provided for on Upper Ground to the south of the southern landing;

5.2.36 In addition, TfL is separately developing proposals to provide a north-south cycle superhighway across Blackfriars Bridge, and an east-west cycle superhighway along Victoria Embankment. These would provide a fast, segregated new cycle link, which better links into the wider road and cycleway network. It is also proposed that Waterloo roundabout will be transformed to make it safer and less threatening for cyclists.

Road safety

5.2.37 Public realm and highways improvements would be undertaken at the northern landing, including widening of the footways along the southern side of Temple Place. The carriageway would be raised with a 50mm kerb between Surrey Street and the pedestrian crossing to the east of Arundel Street to improve pedestrian connections. A zebra crossing would be provided immediately adjacent to the bridge ramp. It would be flush with the kerb to allow those with disabilities to cross easily. The palette of materials used in Temple Place would be improved to make to make it attractive to pedestrians.

5.2.38 No public realm and highways improvements are proposed for any roads at the southern landing.

Assessment of health effects

5.2.39 A new pedestrian route such as the Garden Bridge would increase the number of destinations that can be reached within a given time-travel distance for the local population. Section 2 of Appendix 2 identifies that accessibility and the provision of public services such as health, education and community facilities have been found to have a direct positive effect on human health.

5.2.40 Enhanced opportunities to undertake active travel journeys, such as walking, once the Garden Bridge is operational is likely to have positive effects on physical health as a result of increased levels of physical activity reducing the risk of many chronic conditions such as heart disease, diabetes and obesity (paragraphs 2.1.8 – 2.10 of Appendix 2 provides further information on the links between physical activity and positive health benefits).

5.2.41 The anticipated health effect of increased opportunities for active travel is speculative, as it requires action on behalf of the population to take up these opportunities.

Recommendations and monitoring

Construction

5.2.42 No further recommendations, beyond those measures outlined in the draft Code of Construction Practice Part A are proposed during construction.

5.2.43 On-going monitoring of draft Code of Construction Practice Part A measures should be undertaken by the contractor to ensure that they have been effective in mitigating potential impacts in relation to construction traffic management and suitable pedestrian and cyclist diversions during construction.

Operation

5.2.44 During operation of the Garden Bridge, it is recommended that The Garden Bridge Trust undertake, or commission a programme of monitoring of pedestrian movements. Data collected should include information on pedestrian numbers; where respondents come from; journey distance; mode of travel; and journey purpose.

5.3 Crime reduction and community safety

Introduction

5.3.1 This section considers the potential effects on health as a result of changes in crime and community safety associated with the construction and operation of the Garden Bridge.

5.3.2 This topic is concerned with:

- Designing out crime;
- Security and street surveillance;
- Mix of uses that avoid creating under-used spaces; and
- Community engagement.

Existing conditions

Crime rates

5.3.3 According to Home Office data[19] (2014) on anti-social behaviour incidents, crimes and outcomes, for the period between February 2013 and January 2014, reported crimes throughout the neighbourhood assessment area ranged between 165 total reported crimes in City of London 001G to the east of the north landing to 6,953 total reported crimes in Westminster 018A to the west of the north landing. The majority of crimes related to other theft (including theft by an employee, blackmail, and making off without a payment), which comprised 32.5% of total reported crimes in the neighbourhood assessment area. Also notable is anti-social behaviour which

[19] Home Office (2014) ASB Incidents, Crime and Outcomes. http://data.police.uk/data/

made up 19.7% of the neighbourhood assessment area and theft from the person which made up 10.51%.

5.3.4 It should also be noted that the LSOAs in WCC and LB Camden, particularly those at the northern end of the neighbourhood assessment area near Leicester Square and Covent Garden had much higher crime rates than the others.

North bank

5.3.1 The north landing of the Garden Bridge is situated in LSOA Westminster 018B which had a total crime rate of 3,190 total reported crimes. This is the second highest total of LSOAs in the neighbourhood assessment area. The LSOAs on the north bank had 83.7% of total reported crimes within the neighbourhood assessment area. Of the total reported crimes, other theft (19.2%), anti-social behaviour (10.2%) and theft from the person (7.1%) were particularly concentrated in the Westminster LSOAs. This may be a reflection of the area as a popular visitor destination.

South bank

5.3.2 The south landing is situated in LSOA Lambeth 036C which had a significantly lower number of total reported crimes at 681 compared to that of the north landing. This is just lower than the median total reported crimes for an LSOA in the neighbourhood assessment area (Lambeth 036D at 744). The LSOAs on the south bank had16.3% of total reported crimes within the neighbourhood assessment area of which other theft (5.0%) and anti-social behaviour (4.4%) were the highest type.

IoD Crime

5.3.3 Crime is one of the seven domains used to determine the overall IMD score mentioned in Sections 4.2.23 to 4.2.26. The crime domain measures the rate of recorded crime for four major crime types – violence, burglary, theft and criminal damage- representing the risk of personal and material victimisation at a small area level.

5.3.4 In the local assessment area, crime rates are generally lower to the north of the River Thames, as shown on Figure 5.12.

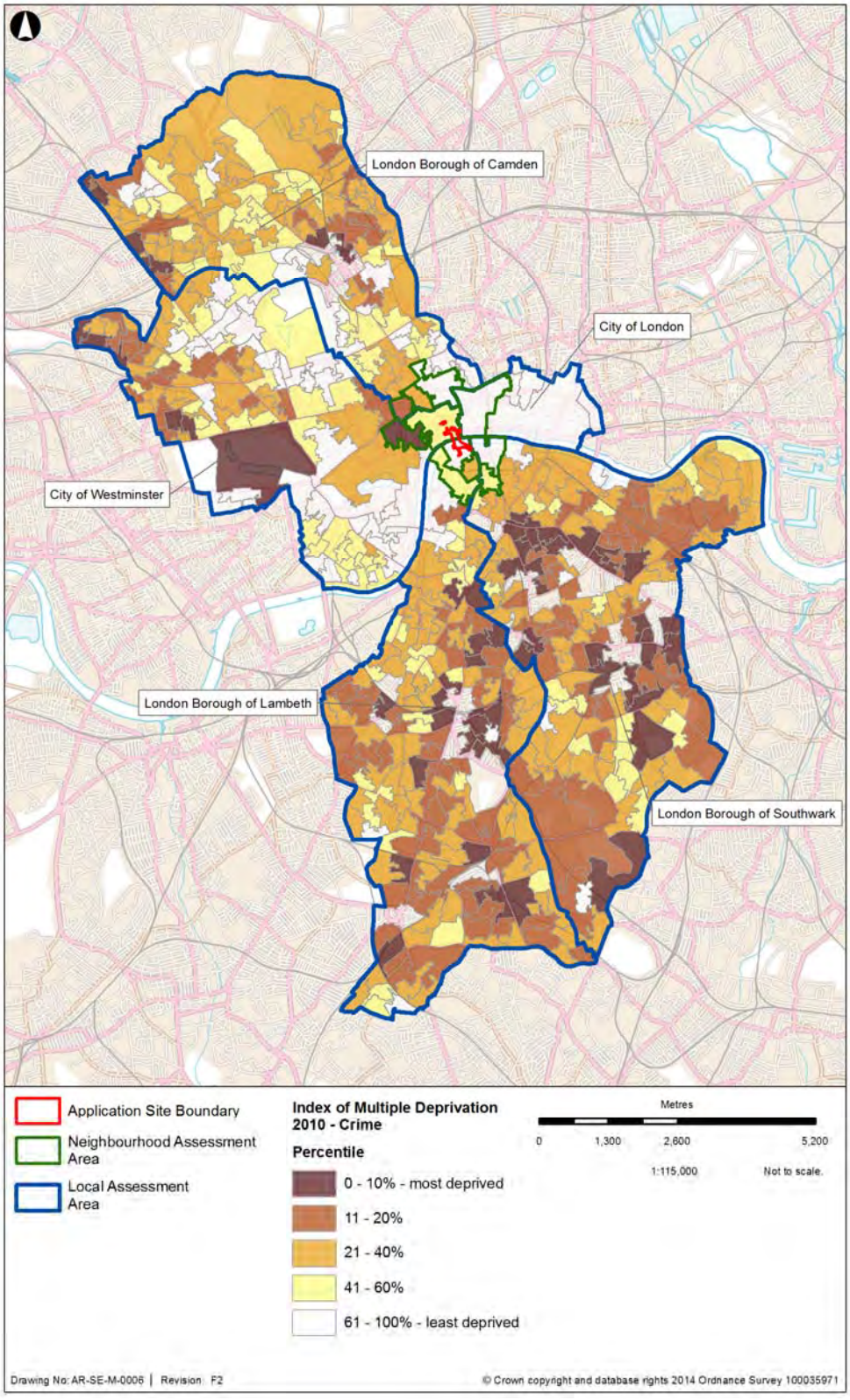

Figure 5.12: Local assessment area, Crime domain, IoD 2010

5.3.5 Within the neighbourhood assessment area crime rates are generally low next to the River Thames, but pockets of high crime occur around Covent Garden to the north of the River

Thames and around Elephant and Castle to the south of the River Thames.

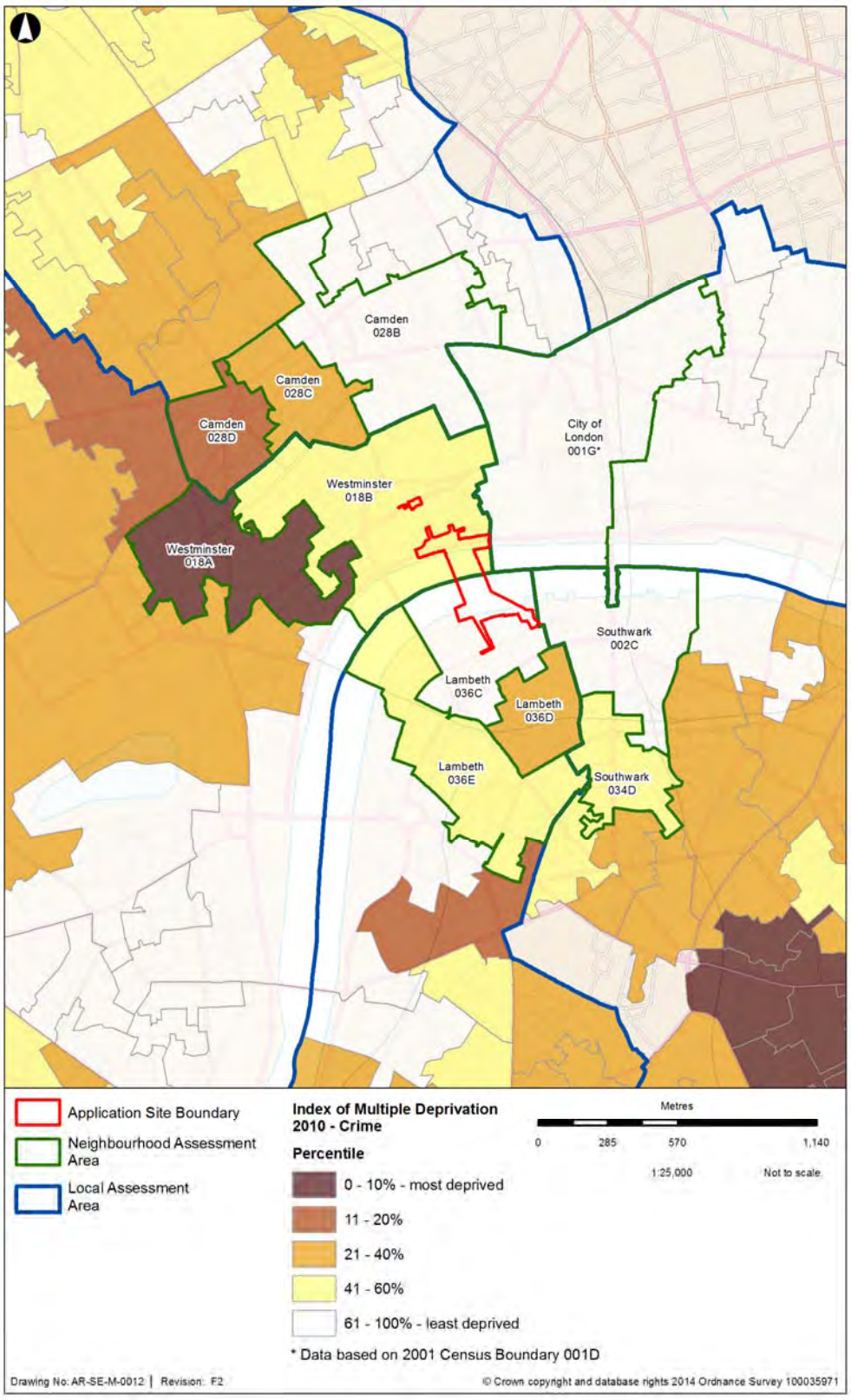

Figure 5.13: Neighbourhood assessment area, Crime domain, IoD 2010

Suicide rates

5.3.6 The Public Health Outcomes Framework(s)[20] for the five boroughs identify that suicide rates (indicator 4.10) for the London Boroughs of Southwark and Camden are below the England average at 7.4 and 7.7 respectively, compared with an England average of 7.9.

5.3.7 Rates in the LB Lambeth are lower than the England average at 6.6.

5.3.8 Rates in the City of Westminster though are higher than the England average, at 9.1.

Impact Assessment

Construction phase

5.3.9 The construction stage may present opportunities for crime resulting from the presence of construction sites, which can attract vandalism and fly-tipping, and encourage theft of building materials. Unsecured sites may also attract antisocial behaviour.

5.3.10 Construction sites located adjacent to residential areas or on routes to key services and facilities can increase fear of crime if they have no active frontages or are poorly lit and unpopulated during evenings and night time.

5.3.11 The presence of building sites which are not active during the evenings can also create an intimidating environment and, if not properly lit and managed, increase fear of crime.

5.3.12 Effective implementation of site security measures, as outlined in the draft Code of Construction Practice Part A, including lighting, security patrols and on-going consultation with local crime prevention officers should minimise potential impacts and reduce the fear of crime.

Operational phase

Designing out crime risk

5.3.13 A threat assessment for ‘criminal and nuisance activities’ was carried out which identified that, without appropriate mitigation there could be a moderate to high likelihood and moderate to high impact across a number of potential threat vectors (ie theft, illegal gambling, rough sleeping, fear of crime, etc.).

5.3.14 Meetings have been held between the design team and the borough crime prevention and design officers and other stakeholders to discuss issues related to crime and safety. Consultees included:

[20] Public Health Observatories (2012). Public Health Outcomes Framework.

- WCC and LB Lambeth Metropolitan Police Service (MPS) Design out Crime Officers;
- WCC and LB Lambeth MPS Counter Terrorism Security Advisors;
- British Transport Police (BTP) Counter Terrorism Security Advisor;
- TfL;
- Centre for the Protection of National Infrastructure (CPNI):
- WCC and LB Lambeth planning departments; and
- SBEG.

5.3.15 Consideration of 'Secured by Design' principles was an important design consideration raised through the HIA process. In response, the Garden Bridge has been designed adopting the principles of Crime Prevention Through Environmental Design (CPTED). The security measures have been developed in consultation with the MPS, BTP and other interested bodies. Measures include:

- routes around and across the Garden Bridge have been laid out to minimise the opportunities for potential offenders to have limited unnoticed access to potential targets or multiple escape routes;
- lift and stair entrances have been designed to maintain lines of sight and ensure clear visibility of lift and stair access;
- gates at each end of the ramp and stairs at the north landing provide a clear line of security enabling the landing and bridge to be closed at night;
- shutters on the arched entrances to the south landing podium enable the landing and bridge to be closed at night;
- transparency of planting, rather than dense planting to minimise secluded areas where crime and anti-social behaviour could take place;
- careful design of seating to minimise areas of seclusion i.e. high seat backs were considered to provide seclusion and opportunities for criminal activity. Seating will also be designed to discourage rough sleeping through the provision of an irregular top surface and would also address the need to prevent explosives being concealed and would be shatter-proof (in the event of an explosion);
- the seating design will also address the need to prevent explosives being concealed, would be shatter-proof (in the event of an explosion); and
- pathways and dwell spaces have generally been developed to ensure multiple routes are possible with no dead-end conditions mitigated. As a result a number of perimeter dwell spaces have been provided with alternative routes through

planting to address perceived risks from dead-end conditions. These would be minimum pathway routes at 750mm in width and are not intended to be used for general circulation.

5.3.16 The design of the lifts is still under development, but will take account of safety requirements.

5.3.17 Lighting on the Bridge and the landings support good natural and CCTV surveillance during the hours of darkness. The CCTV system would be provided to support public safety and law enforcement.

Lighting

5.3.18 The lighting design has been developed to be flexible so that general light levels can be readily increased or decreased in response to specific security or ecological conditions.

5.3.19 Safety has been an important consideration of the lighting strategy for the Garden Bridge. The strategy has been designed in accordance with recognised standards, including:

- Association of Chief Police Officers (ACPO) Secured by Design (2011). 'Lighting against crime. A guide for crime reduction professionals'.
- BSI Standards Publication (2013). BS 5489-1:2013 'Code of practice for the design of road lighting. Part 1: Lighting of roads and public amenity areas'
- British Standards Institute (2013). BS EN 13201-2:2003 'Road lighting performance requirements'.

5.3.20 The lighting strategy has been designed to provide enhanced levels of lighting in key areas for safety, in terms of reducing risk of crime, and to reduce the risk of trips and accidents. On this basis, stairs, ramps, and landings would have higher lux levels for safety with linear lighting integrated into the handrails; down-lighting will also be provided over lift entrances.

Reducing risk to life

5.3.21 A need to reduce suicide risk was highlighted through the HIA process and consequently the balustrade design has been revised to deter people from climbing over them, mitigating opportunities for suicide.

5.3.22 The guard rails would be formed of vertical blackened stainless steel circular bars, providing the requisite 100mm spacing for safety, with a minimum top-rail guarding height at 1.2m in line with the Millennium Bridge nearby.

5.3.23 Life-saving equipment would be incorporated into seating in line with PLA requirements.

Assessment of health effects

5.3.24 The majority of health effects resulting from crime and safety are considered to be speculative as they are dependent on criminal or unsafe activities taking place.

5.3.25 The implementation of appropriate security measures on site, including adequate site hoarding and the implementation of a travel management plan during construction that will outline appropriate construction traffic routes and controls, will reduce the potential effects on health to neutral.

5.3.26 At the operational phase opportunities for crime and the fear of crime would be reduced through adopting 'Crime Prevention Through Environmental Design' and 'Secured by Design' principles. Reduction on the fear of crime is assessed to have positive effects on mental health and wellbeing and should encourage greater use of the Garden Bridge by more 'vulnerable' groups such as women, older people and people with disabilities. Further information on crime and the fear of crime, and the links to individual and community wellbeing is outlined in section 3 of Appendix 2.

Recommendations and monitoring

5.3.27 The following recommendations respond to the need to reduce any residual negative effects on health or opportunities to further maximise any potential opportunities to improve health outcomes as a result of changes in crime and community safety.

5.3.28 A number of potential measures have been identified for future implementation by The Garden Bridge Trust to improve crime and safety, including:

- Management of the Garden Bridge should ensure that it provides a safe and secure environment for both staff and members of the general public. Staffing levels need to be considered so that a visible presence is incorporated into the management strategy. Westminster's City Plan, Policy S29: Health, Safety and Well-Being sets out that '*Development should ensure that the need to secure a healthy and safe environment is addressed*'. City of London Safer City Partnership Plan highlights anti-social behaviour and the night-time economy as key issues in the area and they have been targeted in the plan to improve safety and security for the local residents. The Safer Lambeth Partnership Plan highlights community safety as a top priority.
- The Garden Bridge should be smoke free and alcohol free. Making the Garden Bridge alcohol free would make it a safer and more welcoming environment for all and dissuade anti-social behaviour. Consultation on the scoping report indicated that the DPH's were strongly supportive of making the bridge smoke and alcohol free. Southwark's Health and

Wellbeing Strategy also identifies prevention and reduction of Alcohol misuse as a priority area.

- The management strategy should also include the following measures to maximise the safety of both staff and visitors:
  - Ensuring there are no trip hazards.
  - Careful management of watering regimes to reduce accident risk.
  - Control of lighting to ensure safety and minimise opportunities for crime.
  - Control on maintenance vehicle movements to limit risk of injury.

  It is anticipated that the measures would be an integral part of the general maintenance and management of the Garden Bridge and would be controlled by relevant Health and Safety legislation.

5.3.29 During operation of the Garden Bridge, it is recommended that The Garden Bridge Trust undertake, or commission a wellbeing survey. Data collected should include information on how the bridge makes visitors feel; and perceptions of safety.

5.4 Social cohesion

Introduction

5.4.1 This section considers the potential effects on health as a result of impacts on social cohesion associated with the construction and operation of the Garden Bridge.

5.4.2 This topic is concerned with:

- Social interaction;
- Access to community facilities;
- Voluntary sector involvement; and
- Community severance.

Existing conditions

Communities

5.4.3 The north side of the River Thames is dominated by commercial properties, although a residential community can be found at Inner Temple approximately 250 to the east of the proposed site.

5.4.4 There is a strong sense of community on the south side of the River Thames, centred on the community around Coin Street. Coin Street Community Builders are a social enterprise and development trust which seeks 'to make London's South Bank a better place in which to live, to work and to visit'[21]. It was

[21] http://coinstreet.org/

established by local residents in 1984 following a campaign against large scale office proposals. Only people living locally can become Coin Street Community Builders members.

5.4.5 Activities engaged in by Coin Street Community Builders include creating new co-operative homes; shops, galleries, restaurants, cafes and bars; a park and riverside footway; sports facilities; by organising festivals and events; and by providing childcare, family support, learning, and enterprise support programmes.

5.4.6 There is also a Coin Street Secondary Housing Co-operative (CSS) which acts as a social landlord.

5.4.7 The Coin Street Centre Trust was also established by individual members of Coin Street Community Builders in 1987 and currently oversees Coin Street family and children's centre and Colombo Street community and sports centre. In the future the Trust will also offer a sports and leisure programme from the public swimming and indoor leisure centre being planned as part of Coin Street Community Builders' Doon Street development.

Community buildings and facilities.

5.4.8 On the north side of the River Thames the Walkabout Bar occupies part of the Temple LU Station building.

5.4.9 On the south side of the River Thames Bernie Spain Gardens is an area of park which stretches between the riverside and Stamford Street, bordered by Oxo Tower Wharf and Gabriel's Wharf and straddling Upper Ground. The gardens are a regular venue for public events, notably the summer Coin Street Festival series of free cultural extravaganzas. The park was built by - and is now owned and managed by Coin Street Community Builders.

5.4.10 The Coin Street neighbourhood centre on Stamford Street provides families in the area with access to community facilities and services and forms part of Coin Street Community Builders' strategy to provide childcare, learning, enterprise support and leisure opportunities affordable to all members of the community.

5.4.11 The neighbourhood centre contains:

- A 64-place day nursery providing childcare from three months to five years;
- Out of school provision and youth clubs;
- Parent and family support programmes including practical workshops;
- Evening and weekend activities;
- Conference, meeting and training spaces of the highest quality available for business and community hire;

- Crèche for parents/carers using the centre;
- Access to Guy's and St Thomas' Hospital midwifery and other specialist teams;
- Access to training and employment opportunities; and
- Access to business and social enterprise support.

5.4.12 The Colombo Centre is a local social enterprise and charity governed by Coin Street Centre Trust. The centre on Colombo Street in SE1 provides health, recreation and leisure facilities at an affordable price to residents and employees in the London Boroughs of Lambeth and Southwark.

5.4.13 The Iroko Housing co-operative scheme between Coin Street, Cornwall Road and Upper Ground is centred on a shared communal garden which provides designated play areas and a place for the community to meet and interact.

Impact Assessment

Construction Phase

5.4.14 During the construction phase, construction activities such as the additional traffic movements caused by deliveries of goods, materials and people, may cause some degree of severance, affecting people's access to other members of their community and community gathering places such as community centres and community gardens.

5.4.15 Impacts would be felt by individuals within the community who are affected by the development due to their locations and the facilities they use, in particular those whose social support networks rely on these facilities.

Operational Phase

Community severance

5.4.16 The operational Garden Bridge is anticipated to result in reduced community severance through improved north-south links across the River Thames, although the distinctly variable nature of the two communities on either side of the Garden Bridge raises the questions of how much interaction and integration between the two communities would actually occur.

Community facilities

5.4.17 The Garden Bridge provides additional spaces for the local community to utilise for leisure activities such as walking and also provides places for people to meet and interact in the form of the dwell spaces on the bridge.

5.4.18 A new structure would be constructed as part of the south landing for the Garden Bridge. Although the use of the building has not been confirmed, this would be a flexible space with the opportunity to incorporate facilities such as a visitor centre/café,

or some sort of exhibition space with the potential to be beneficial to the local community.

Assessment of health effects

5.4.19 Impacts on social networks and interactions are likely to be limited during the construction phase due to the limited residential community in the vicinity of the Garden Bridge. However, vulnerable groups in the adjacent Coin Street area to the south of the Garden Bridge, may be disproportionately affected – for example, older people may be vulnerable to the impacts of increased construction traffic which may dissuade them from leaving the home and impact on levels of social interaction.

5.4.20 The operational phase is assessed to result in positive effects on mental and physiological health as a result of increased opportunities for social interaction and new places to meet people.

5.4.21 Volunteering has been linked to social cohesion and the Garden Bridge may provide these opportunities.

5.4.22 Further information on the links between social capital and health and wellbeing is provided in section 4 of Appendix 2.

Recommendations and monitoring

Construction

5.4.23 The effects of severance and impacts on community facilities can be mitigated through timely communication of proposed construction activities, road closures, bus diversions etc., to the relevant stakeholders and local communities. Measures for effective community engagement, advance notice of works, and a community helpline are outlined in the draft Code of Construction Practice Part A.

Operation

5.4.24 The following recommendations respond to the need to reduce any residual negative effects on health or opportunities to further maximise any potential opportunities to improve health outcomes as a result of impacts on social cohesion.

5.4.25 A number of potential measures have been identified for future implementation by The Garden Bridge Trust to enhance the value of the Garden Bridge for the local community, including:

- Consider using public art and/or community art to foster community capital and enhance the public realm. These installations could be small scale and permanent or larger temporary displays. They could be located on the bridge itself, or on the landing points. These would tie in well with the theme of culture and art that is prevalent along the South Bank.

- Consider the potential for a separate, but linked site in close proximity to the Garden Bridge where a plant nursery, composting facility, educational activities and festivals could take place as part of community engagement and wider Garden Bridge initiatives. This could be a joint initiative with the Coin Street Community Builders or other similar local groups.
- Consider whether the proposed structure at the south landing could incorporate uses that are beneficial to the local community and/or provide additional facilities where the local community can meet and interact.
- As highlighted in paragraph 5.1.40 and 5.1.41 other initiatives such as involving the community in planting and maintenance schemes would all provide additional benefits for the local community in terms of social inclusion and interaction.

5.5 Air quality, noise and neighbourhood amenity

5.5.1 This section considers the potential impacts on health as a result of changes in air quality, noise and neighbourhood amenity associated with the construction and operation of the Garden Bridge.

5.5.2 This topic is concerned with:

- Construction impacts;
- Air quality;
- Land contamination;
- Noise, vibration and odour;
- Quality of the local environment; and
- Provision of green space and trees.

Existing conditions

Air Quality

5.5.3 With regards to air quality the baseline conditions would be similar on both sides of the River Thames therefore no separate distinction between the two River Thames banks has been made.

5.5.4 Each of the local authorities located in proximity to the site (WCC, City of London, LB Lambeth and LB Southwark) has declared an Air Quality Management Area (AQMA). These AQMAs have been declared due to measured or modelled exceedences of air quality objectives for either Nitrogen Dioxide (NO_2)(annual mean objective 40µg/m^3) or Particulate Matter up to 10 micrometers in size (PM_{10}) (annual mean objective 40µg/m^3) or both. All four authorities have declared an AQMA

for PM_{10}. This indicates the area all around the development site is already potentially highly sensitive to particulate matter.

5.5.5 Estimated background air pollution data produced by the Department of the Environment, Food and Rural Affairs (Defra), in the vicinity of the site, indicates that PM_{10} concentrations are just over half the annual mean objective.

5.5.6 The location of human receptors in the vicinity of the development site has been identified based on site knowledge and coordinates extracted using ArcGIS mapping software. There are fewer than 100 receptors on both the north and south banks of the River Thames within 50m of the site.

Noise

5.5.7 Existing sensitive receptors on the north bank of the River Thames include hotels as well as vessels moored on the north bank of the River Thames. It should be noted that the Victoria Embankment is heavily trafficked which sets the ambient noise level higher than the un-trafficked south side of the River Thames; therefore the south side is likely to be more sensitive to noise change.

5.5.8 To the south of the River Thames there are more extensive public areas including The Queen's Walk, attracting more pedestrian and leisure uses than the north bank. It is also close to significant theatres, concert halls and auditoria. The Queen's Walk is also used for small exhibitions and events including outdoor theatre.

Neighbourhood Amenity

5.5.9 Information on the existing provision of green space is provided in paragraph 5.1.3 to 5.1.5. in the section on access to open space and nature.

Impact Assessment

5.5.10 Environmental assessments of the potential air quality and noise impacts arising from the proposed scheme have been made in the ES and these assessments have been used to inform the HIA.

Construction Phase

Air quality

5.5.11 The air quality assessment outlined in the Garden Bridge ES only considers effects of construction dust at local sensitive receptors. Effects from construction machinery, construction related road vehicles and river barges have been scoped out on the basis that effects are not likely to be significant due to the low number of vehicle movements.

5.5.12 The main sources of dust generation during construction would be:

- Haulage routes;
- Materials handling;
- Exhaust emissions from site plant;
- Site preparation;
- Demolition; and
- Construction processes.

5.5.13 Dust is not generally associated with negative health effects, although it can cause 'nuisance' effects through amenity loss or perceived damage caused.

5.5.14 Section 5 of the draft Code of Construction Practice Part A addresses air quality and requires works to be carried out in accordance with Best Practicable Means. This includes measures to limit emissions from construction plant, vehicles and equipment. Dust and air quality management measures would be implemented to limit pollution arising from the transportation and storage of materials.

5.5.15 As the draft Code of Construction Practice Part A includes all necessary mitigation measures for this level of dust risk, the air quality assessment within the ES has assessed that the effects of construction-related dust would be 'not significant' on the north or south banks.

Noise

5.5.16 The main potential sources of noise during construction include:

- noise from general construction activities, such as preparatory works at the riverbank sites, piling and concrete pumping;
- vibration from construction activities;
- noise from construction road traffic on neighbouring roads;
- noise from the movement of river barges; and
- noise from de-watering pumps or any land-based ancillary plant.

5.5.17 Section 9 of the draft Code of Construction Practice Part A addresses noise and vibration and requires works to be carried out in accordance with Best Practicable Means. This includes:

- Careful selection of plant machinery and equipment;
- Construction of hoarding, screens and enclosures;
- Selecting methods of works that are less intrusive;
- Using non-audible warning systems where safety permits;
- Planning of construction traffic around sensitive receptors and careful programming so that activities which may

generate significant noise would be planned with regard to local occupants and sensitive receptors

- Suitable sited equipment so as to minimise noise impact;
- Ensuring pro-active links between noise management activities and community relations activities.

5.5.18 The noise assessment concludes that there would be no significant noise effects on receptors to the north of the River Thames as a result of construction activities, road-based construction traffic or river based construction traffic.

5.5.19 On the south bank of the River Thames the noise assessment concludes that there are no significant effects on any residential receptors on the south bank of the River Thames.

5.5.20 In terms of non-residential receptors such as the National Theatre, The Queens Walk, the ITV building and Gabriel's Wharf, noise impacts with access options A and B are also assessed to generally not be significant (inside any buildings), although a short length of The Queens Walk would be affected by construction noise levels only just exceeding ambient noise.

5.5.21 Noise impacts for receptors on the south bank of the River Thames, as a result of the maximum river option are also assessed to be not significant.

Neighbourhood Amenity

5.5.22 An assessment of the potential impacts of construction on green space provision is provided in paragraph 5.1.6 to 5.1.12 under access to open space and nature.

Operational Phase

Air Quality

5.5.23 The Garden Bridge is designed for pedestrians only with no provision for motorised vehicles and therefore operational effects on air quality from vehicular sources would not arise. In fact the operational bridge would minimise the impacts of air pollution, by promoting walking over car use, although this would be unlikely to be by any quantifiable amount.

Noise

5.5.24 Operational noise and vibration effects of the Garden Bridge have been scoped out of the assessment in the ES as there was not expected to be any significant operational plant machinery; the additional pedestrian traffic that the Garden Bridge would attract would not be expected to adversely alter the noise climate of the area on either side of the River Thames; and maintenance activities for the structure are likely to be minimal and infrequent and are not considered likely to result in significant noise effects.

Neighbourhood Amenity

5.5.25 An assessment of the potential impacts of operation on green space provision is provided in paragraph 5.1.13 to 5.1.18 under access to open space and nature.

Assessment of health effects

5.5.26 The scale of any impact of changes in air quality and noise during construction of the Garden Bridge is considered to be reduced to a negligible level through the effective implementation of mitigation measures outlined in the draft Code of Construction Practice Part A, so health effects are anticipated to be negligible for the majority of receptors.

Recommendations and monitoring

5.5.27 On-going monitoring of Code of Construction Practice measures should be undertaken by the contractor to ensure that they have been effective in mitigating potential impacts in relation to traffic, dust, noise and vibration impacts on adjacent receptors, and particularly, sensitive receptors such as residential properties.

5.6 Access to healthy food

Introduction

5.6.1 This section considers any changes in access to healthy food associated with the construction and operation of the Garden Bridge.

5.6.2 This topic is concerned with:

- Healthy localised food supply;
- Hot food takeaways;
- Social enterprises; and
- Allotments and community food growing spaces.

Existing conditions

5.6.3 On the north side of the River Thames, the nearest food shops and restaurants are located on the Strand, approximately 200m to the north.

5.6.4 On the south side of the River Thames, food shops can be found at Waterloo LU and National Rail Stations. Restaurants and other food outlets can be found along the South Bank and on Stamford Street.

Adult obesity

5.6.5 Within the local assessment area levels of adult obesity are relatively low. Compared with an average rate of 24.2%[22] for England, levels of obesity were at 22.5% for LB Southwark, 20.5% for LB Lambeth, 15.5% for LB Camden and 15.0% for the City of Westminster which was not far off the England best of 13.9%[23].

Childhood obesity (Year 6)

5.6.6 Within the local assessment area, levels of childhood obesity are relatively high compared with the England average of 19.2%[24].

5.6.7 Levels were highest in the LB Southwark at 28.5%, which is the same as the England worst.

5.6.8 Levels were also high in all of the other boroughs though at 24.8% for City of Westminster, 24% for LB Lambeth, and 22.3% for LB Camden.

Impact Assessment

Construction Phase

5.6.9 During the construction stage it is not anticipated that there would be a significant impact, either positive or negative, on diet.

Operational Phase

5.6.10 The operational phase of the Garden Bridge has the potential to influence access to healthy food in a number of ways.

5.6.11 There is the potential for the structure at the south landing to incorporate a food outlet such as a café. These food outlets could have a positive impact on access to healthy food if the right offerings occupy them. However, it conversely also has the opportunity to have a negative impact on access to healthy food if the offerings are fast food or other such outlets.

5.6.12 The Garden Bridge also has the potential to attract other unhealthy food offerings. Neighbouring bridges such as the Millennium Bridge have seen a proliferation of street vendors selling food such as ‘hot sugar coated nuts’. If such vendors are allowed to operate on the Garden Bridge, or are not prevented from doing so, this could have a negative impact on healthy food choices.

5.6.13 There is currently no proposal for corporate sponsorship of the Garden Bridge, but if it was to be considered it also has the

[22] % adults, modelled estimate using Health Survey for England 2006-2008
[23] All obesity data taken from Public Health England, 2013 Health Profiles. http://www.apho.org.uk/default.aspx?QN=HP_FINDSEARCH2012
[24] % school children in Year 6 (age 10-11), 2011/12

potential to influence healthy food choices. In terms of sponsorship, if the Garden Bridge is sponsored by a fast-food outlet, this could be considered to be a negative effect in terms of promoting healthy food choices.

Assessment of health effects

5.6.14 The links between diet and health are numerous and well established. However, there are limits as to how far the Garden Bridge project can influence diet, since this is dictated by the choices made by individuals. As with exercise, it would be difficult to directly attribute any future changes in eating habitats to the development.

5.6.15 If The Garden Bridge Trust promotes positive behaviours in relation to access to healthy food through the measures outlined below, then effects on health are assessed to be positive. Although, based on the statistics of the daytime population (4.2.6 - 4.2.10) the majority of users are likely to be tourists and office workers rather than local people, and therefore the positive effects associated with a healthy diet, such as a reduction in chronic conditions associated with obesity, are not likely to be felt greatest within the local community and any effects are likely to be dispersed and diluted across a wider geographical area.

5.6.16 An absence of fast food outlets would be beneficial though to the local community where obesity levels amongst children are currently higher than the national average (4.3.21).

Recommendations and monitoring

5.6.17 The following recommendations respond to the need to reduce any residual negative effects on health or opportunities to further maximise any potential opportunities to improve health outcomes as a result of changes in access to healthy foods.

5.6.18 A number of potential measures have been identified for future implementation by The Garden Bridge Trust, including:

- Ensure that sponsorship does not promote activities or behaviours that impact negatively on health, for example, sponsorship by fast food outlets would not be commensurate with the aims of the Garden Bridge to improve physical and mental health and wellbeing and promote important public health behaviours.
- Consider opportunities for growing food on the bridge or at the landing points. This could take the form of food gardens or food/salad walls. These could be installed at, or on the landing points.

  Access to healthy food is supported by draft Lambeth Local Plan, ‘Policy EN2: Local Food Growing and Production’ which supports the incorporation of allotments, community gardens and innovative spaces for growing food.

5.7 Access to work and training

Introduction

5.7.1 This section considers the potential impacts on health as a result of access to work and training associated with the construction and operation of the Garden Bridge.

5.7.2 This topic is concerned with:

- Access to employment and training;
- Job diversity; and
- Business support

Existing conditions

Economic activity

5.7.3 Economic activity is an analysis of the working age population who are part of the labour market, i.e. either currently in or seeking employment. The breakdown of data available in the most recent census (2011) at LSOA level includes a different working age group to those set out in the population section of this baseline; here those aged between 16 and 49 years have been considered.

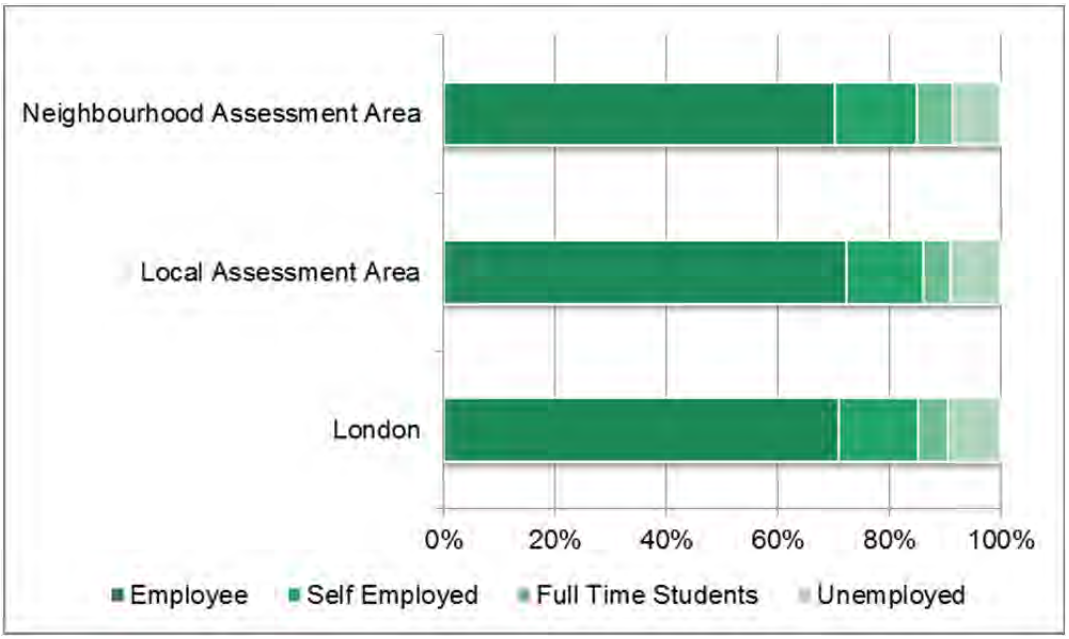

Figure 5.14: Economically Active Aged 16-49, ONS 2011

5.7.4 Economic activity data is divided into employees, self-employed and full time students (who are in or seeking employment) and those who are unemployed. According to Census 2011 data, the three assessment areas had a largely comparable distribution of the subdivisions of economic activity in percentage terms. The neighbourhood assessment area had a slightly lower proportion of the economically active population

who were unemployed (8.7%) in comparison to the local assessment area (9.1%) and London (9.6%).

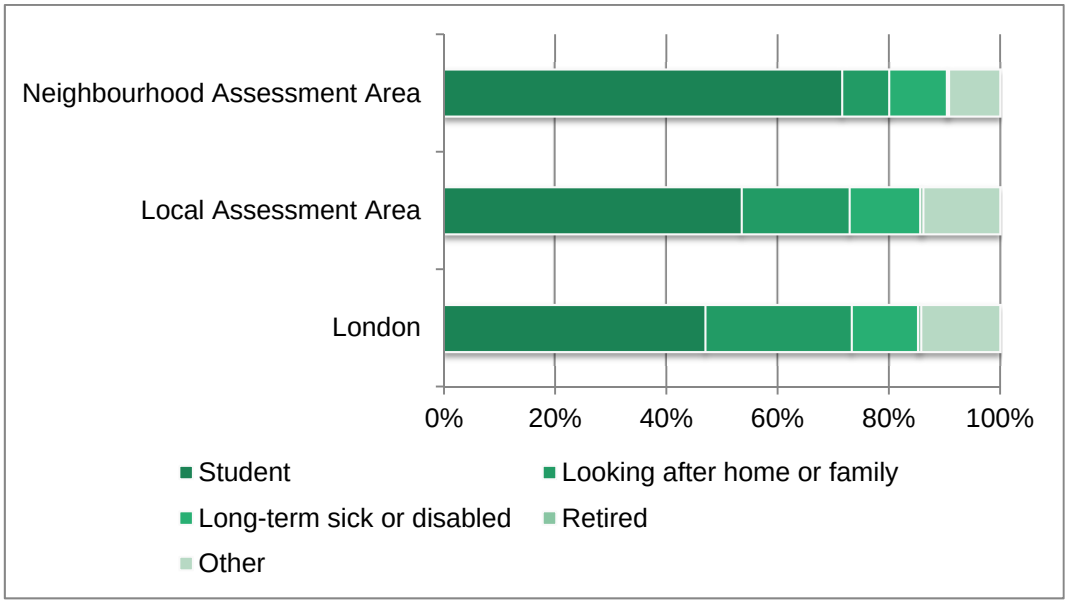

Figure 5.15: Economically Inactive Aged 16-49 years, ONS 2011

5.7.5 Economic inactivity is divided into those who are retired, students (who are not in or seeking employment), looking after home of family and long-term sick or disabled. Census 2011 data shows that full time study was the main reason for economic inactivity in the neighbourhood assessment area and local assessment area. There are a significantly larger proportion of economically inactive residents who are full time students in the neighbourhood assessment area (71.6%) in comparison to the local assessment area (53.5%) and London (49.6%). This may reflect the university accommodation located in these areas. A comparatively low proportion of residents who were economically inactive were looking after a home or family in the neighbourhood assessment area (8.4%) than for the local assessment area (19.3%) and London (26.3%).

5.7.6 In terms of youth unemployment, levels are very low in the City of London at 0.5%, compared with an average across London of 1.2%. Levels are also below average in LB Camden and City of Westminster (both 0.8%). Levels of youth unemployment are slightly higher in the London Boroughs of Lambeth and Southwark at 1.2%, which is the same as the London and England average[25].

Employment

5.7.7 The distribution across industries for employed residents for each geographical area indicates that the neighbourhood assessment area and the local assessment area have a low percentage of residents employed in construction (2.4% and

[25] ONS (2011) 'Economic Activity',2011 (KS601EW)

3.7% respectively) in comparison to London (6.6%)[26]. This is important in the consideration of employment opportunities in construction arising from the proposed development.

5.7.8 According to BRES[27] data, construction made up a low proportion of total workplace-based employment in the neighbourhood assessment area, representing 1.0% of employment in 2012 in comparison to 1.5% in the local assessment area and 3.4% in London.

IoD employment deprivation

5.7.9 Employment deprivation is one of the seven domains used to determine the overall IMD score mentioned in Sections 4.2.23 to 4.2.26. The employment domain measures employment deprivation conceptualised as involuntary exclusion of the working age population from the world of work. The 'employment deprived' are defined as those who would like to work but are unable to do so through unemployment, sickness or disability.

5.7.10 At the local assessment area, the pattern of employment is very varied within all of the London boroughs, as shown on Figure 5.16.

[26] ONS (2011) 'Employment by industry'
[27] Business Register and Employment Survey (BRES)

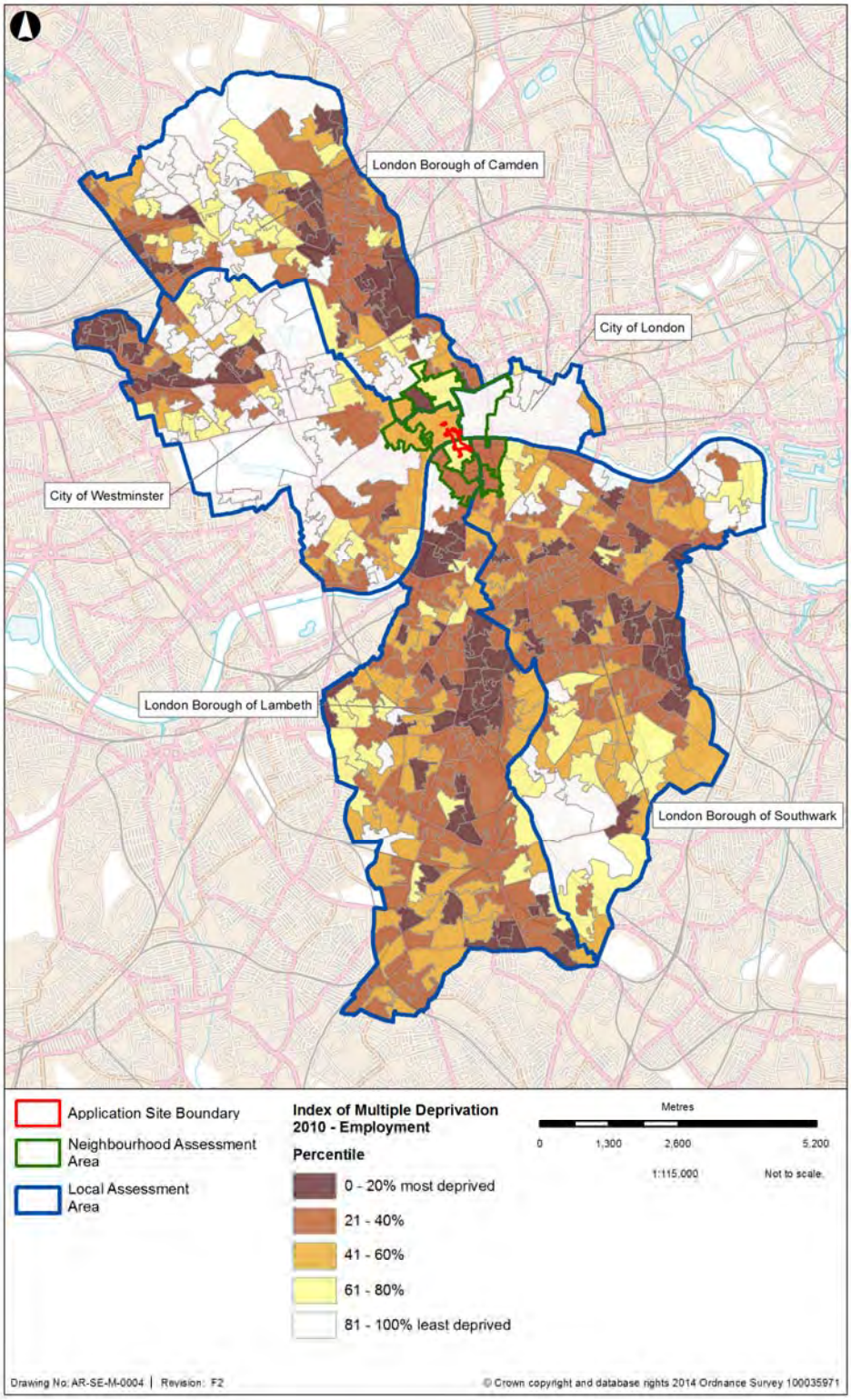

Figure 5.16: Local assessment area, Employment deprivation domain, IoD 2010.

5.7.11 Within the Neighbourhood assessment area levels of employment deprivation are generally greatest on the south side of the River Thames with a number of LSOAs falling within the 21-40% most deprived, whilst on the north side, the majority of LSOAs fall within the 40% least deprived.

5.7.12 The area with the greatest employment deprivation within the neighbourhood assessment area is Camden 028C which falls within the 20% most deprived and is centred on High Holborn and New Oxford Street.

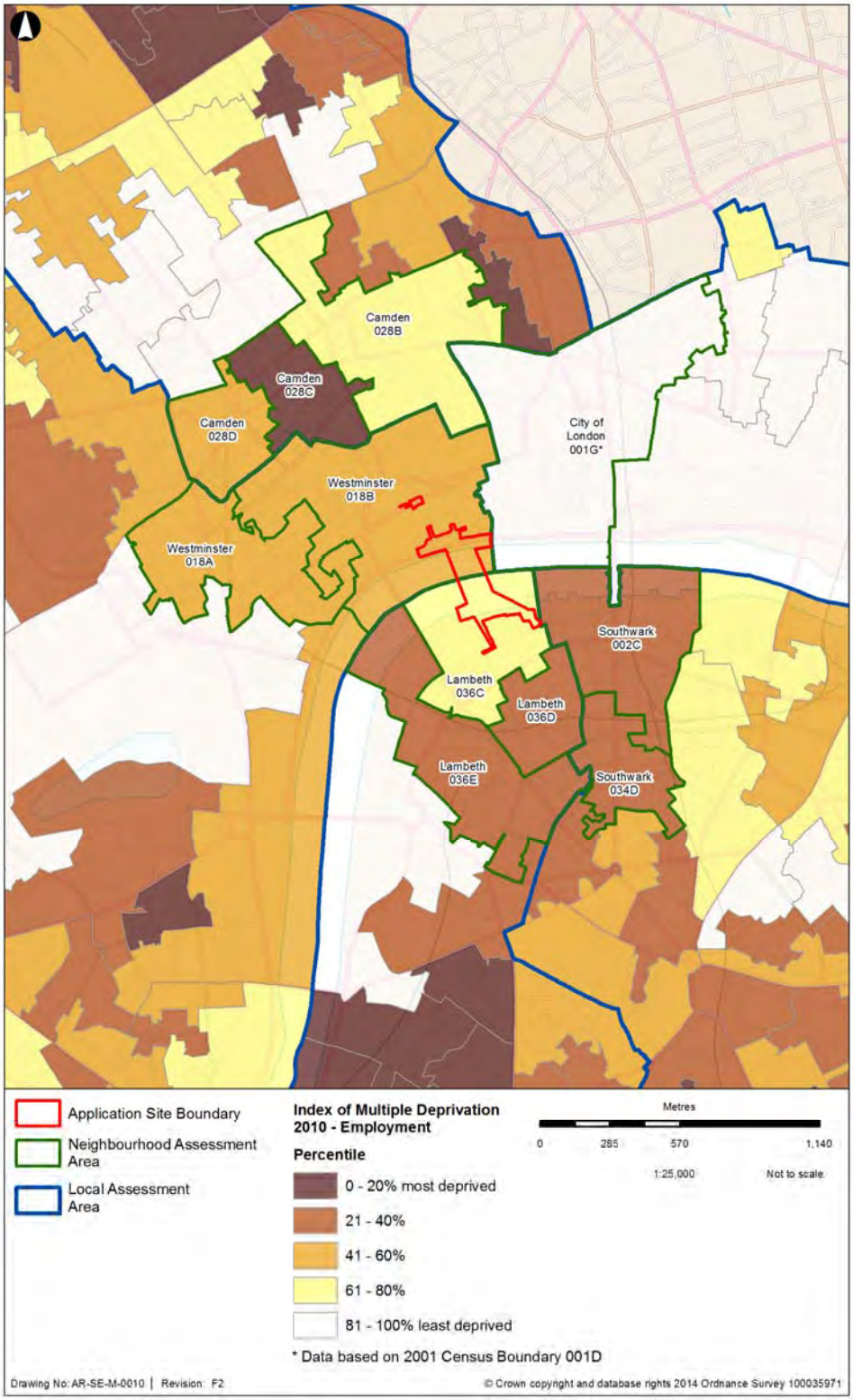

Figure 5.17: Neighbourhood assessment area, Employment deprivation domain, IoD 2010.

Impact Assessment

Construction Phase

5.7.13 The construction phase of the Garden Bridge could last approximately three years and will generate jobs in the construction industry over that period. Employment opportunities generated during the construction phase are likely to be more informal and less secure forms of employment due to the nature of construction contracts. Where possible the workforce could be sourced locally, although the baseline data indicates that there are low levels of residents employed in the construction sector in both the neighbourhood and local assessment areas.

5.7.14 The temporary nature of construction employment has the potential to lead to an increased risk of injury due to insufficient training, particularly in the area of Occupational Health and Safety, although the implementation of statutory health and safety measures will mitigate against this risk. The temporary nature of employment may also lead to higher levels of anxiety over job security compared with permanent employment.

5.7.15 It is expected that construction employment will therefore give rise to a mixture of positive and negative effects, although the net effect is likely to be positive. Effects are also more likely to be felt at the London wide level rather than in the local assessment area.

5.7.16 The project is likely to provide a boost to service industries in the vicinity of the works including, food outlets and convenience stores as a result of any incoming workforce employed during the construction phase that are likely to boost demand for catering, transport etc. Any new employment or increase in profit generated by the construction works is likely to be beneficial to the wellbeing of the affected communities as a result of positive effects on the local economy.

Operational Phase

5.7.17 It is currently assumed that the Garden Bridge will provide jobs for eight full-time gardeners with four additional staff (security or other)

5.7.18 At both construction and operational phases there is an aspiration to champion local businesses.

5.7.19 There are also likely to be positive wider economic benefits for the local area as a result of an increase in visitor numbers and greater permeability between communities and services on either side of the River Thames creating increased demand for goods and services.

Assessment of health effects

5.7.20 The creation of new job opportunities during both the construction and operational phases of the development would have a positive effect on health and wellbeing. This assessment is based on the known links between employment and mental health, and the positive health effects of increased wealth on access to services, food and other health determinants (see section 7 of Appendix 2 for further details). The benefits are assessed as qualitative, since any direct link between jobs and health outcomes cannot be measured due to the number of other contributory factors. Effects on individuals are largely speculative as they rely on uptake of the employment opportunities offered.

5.7.21 Risks of injury to the construction workforce is likely to be of low probability as the implementation of statutory Health and Safety measures should mitigate against this. However, it is assessed that should injury occur, it is probable that there would be an effect on health and wellbeing and that this effect would be 'calculable'; although Health and Safety measures should reduce this to a low level of probability.

Recommendations and monitoring

5.7.22 The following recommendations respond to the need to reduce any residual negative effects on health or opportunities to further maximise any potential opportunities to improve health outcomes as a result of changes in access to work and training.

5.7.23 During both the construction and operational phases opportunities should be considered to source local employment through promotion of jobs in local job centres and schools/colleges. Job vacancies should be advertised in local employment centres, community centres and through local media.

5.7.24 Westminster's City Plan, Policy S19; Lambeth Local Plan, Policy ED15; and Our Vision 2020: Lambeth's Sustainable Community Strategy, all support the need for employment and training schemes for the local population.

5.7.25 During both construction and operation of the Garden Bridge, the use of local suppliers, where viable, should be promoted.

5.7.26 The operational phase of the Garden Bridge should include apprentice and volunteering schemes.

5.8 Minimising the use of resources

Introduction

5.8.1 This section considers the potential effects on health as a result of impacts on resource use associated with the construction and operation of the Garden Bridge.

5.8.2 This topic is concerned with:

- Recycling and reuse;
- Sustainable design and construction;
- Waste management; and
- Potential hazards.

5.8.3 Reducing or minimising waste including disposal processes for construction as well as encouraging recycling at all levels can improve human health directly and indirectly by minimising environmental impact, such as air pollution

Existing conditions

5.8.4 There is no applicable baseline for this determinant.

Impact Assessment

Construction Phase

Waste management

5.8.5 The draft Code of Construction Practice: Part A outlines that a Site Waste Management Plan (SWMP) should be developed which should outline how construction waste would be managed. The SWMP should align with the waste hierarchy principles of

1. Reduce
2. Reuse
3. Recycle

With disposal to an appropriately licensed landfill as the last choice.

5.8.6 The SWMP would be an evolving document that would be further developed by the contractor once they are on board.

5.8.7 In terms of waste minimisation the project will aspire to meet TfL's targets for 'Resource Consumption and waste recycling' as set out in their annual 'Health, Safety and Environment Report, 2012/13'. The south landing building will aspire to meet the targets of the Building Research Establishment Environmental Assessment Methodology (BREEAM) level 'Very Good'.

5.8.8 In terms of waste reduction during construction the vast majority of construction materials for the bridge would be made up of pre-assembled steelwork / soffit panels and supply of ready mixed concrete. There would be temporary steelwork required during the delivery of the steelwork / soffit panels which, when removed, would be taken by barge back to the off-site fabrication site for reuse.

5.8.9 Waste materials would be created by the finishing works on the bridge plus north and south landings. Segregated waste materials skips would be located at both north and south landings for the different waste types and removed by lorry to licensed waste processing facilities.

Sustainable design

5.8.10 The naturalistic planting scheme will include some native English plantings.

5.8.11 A Sustainability Statement has been produced for the project which sets out how the Garden Bridge design and proposed management responds to sustainable development policy for the boroughs. The Sustainability Statement covers issues including waste minimisation, energy use and employment, further details of which can be found in other sections of this report.

Operational Phase

Waste management, recycling and reuse

5.8.12 For reasons of safety and security litter bins are not proposed on the bridge, but are proposed at landing points with the potential for sort at source recycling. Visitors would be encouraged to dispose of their litter at the landings in order to mitigate additional cleansing requirements to the immediate vicinity. Garden Bridge staff would be at hand to pick litter and ensure that a ‘zero-tolerance’ approach to refuse is maintained.

Assessment of health effects

5.8.13 Reducing or minimising the amount of construction waste produced would improve human health directly and indirectly by minimising environmental impact such as air pollution associated with transportation of waste materials. Further details on the links between air quality impacts and health effects are provided in section 5.5 and section 5 of Appendix 2.

Recommendations and monitoring

5.8.14 The following recommendations respond to the need to reduce any residual negative effects on health or opportunities to further maximise any potential opportunities to improve health outcomes as a result of resource use minimisation:

- The sourcing and transport of trees and planting should, where possible, minimise travel distance and consider sustainability credentials of source.

5.9 Climate change

Introduction

5.9.1 This section considers the potential effects on health as a result of impacts related to climate change associated with the construction and operation of the Garden Bridge.

5.9.2 This topic is concerned with:

- Renewable energy;
- Sustainable transport;
- Building design;
- Biodiversity; and
- Flood risk and drainage.

5.9.3 There are direct impacts linking the environment and health such as heat-related effects, flooding and poor air quality and indirect impacts such as fuel poverty, access to green space and disruption to services and access such as healthy food.

Existing conditions

5.9.4 The Government's latest UK Climate Change Projections suggest that by the 2050s, London could see an increase in mean summer temperature of 2.7 degrees, an increase in mean winter rainfall of 15 per cent and a decrease in mean summer rainfall of 18 per cent over a 1961–1990 baseline[28].

Impact Assessment

Construction Phase

5.9.5 General planting would be "resonant of European estuarine landscapes", specifically selected for ability to survive in extreme environments and would include a certain proportion of British native planting.

Operational Phase

Renewable Energy

5.9.6 The possibilities for renewable energy generation as part of the Garden Bridge scheme were explored. As a result ground source heat pumps would be provided within the piles of the south landing bridge support structure. The ground source heat pumps would be low carbon energy, with very low to no local environmental impacts and would be used for the south landing building.

[28] Mayor of London (2011) The London Plan: Spatial development strategy for greater London)

Future proofing

5.9.7 The Garden Bridge has been designed to sustain heat stresses 50 years into the future.

5.9.8 The clearance of the Garden Bridge has accounted for possible sea level rise based on climate change predictions.

5.9.9 The planting strategy has been designed to be diverse with the potential to adapt species 50 years into the future

Microclimate

5.9.10 The planting design which includes 700mm high hedges and layered low level and high level planting, along with the orientation of seating areas also been developed to provide shelter from wind/deflect wind.

5.9.11 Planting has also been designed to provide shading, however a transparent approach is preferred to filter and dissipate wind, and there are security constraints associated with 'solid' structures.

5.9.12 To reduce the potential impacts of climate change on the health of users of the Garden Bridge, and in direct response to a recommendation made through the HIA process, a drinking water fountain would be provided adjacent to the lift core.

Assessment of health effects

5.9.13 The scheme has been designed to reduce any potential health effects related to climate change through provision of shade and water provision to guard against heat related health effects and through minimising direct threat to life from flooding. Therefore climate change related health effects linked to the scheme are assessed to be neutral.

Recommendations and monitoring

5.9.14 No further recommendations are made in relation to minimising the potential effects to health of climate change in relation to the Garden Bridge.

6 Conclusions

6.1 Assessment of impacts and health effects

6.1.1 During construction, there is the potential for some short term health effects, related to the following impacts on the health determinants:

- Temporary loss of open space along The Queens Walk and Bernie Spain Gardens on the south bank as a result of construction access affecting their use for physical activity, relaxation and socialising.
- The addition of construction related traffic on local roads affecting their use by cyclists (particularly commuters) and altering perceptions of road safety for both cyclists and pedestrians, and particularly more vulnerable users such as children and the elderly.
- Increased fear of crime caused by the presence of vacant building sites which can create intimidating environments if not properly lit and managed.
- Potential for impacts on air quality and the noise environment for local sensitive receptors.

6.1.2 Measures outlined in the draft Code of Construction Practice Part A, including noise and air quality control measures, traffic management plans, effective pedestrian diversions, site security measures and timely communication of construction activities should significantly mitigate all potential impacts during construction to negligible levels.

6.1.3 The creation of new job opportunities during both the construction and occupational phases of the development would have a positive effect on health and wellbeing for those that secure jobs. This assessment is based on the known links between employment and mental health, and the positive health effects of increased wealth on access to services, food and other health determinants. Construction workers in the local area may financially benefit local service industries such as shops and cafes.

6.1.4 At the operational phase, the Garden Bridge has the potential to have positive effects on health, and particularly mental health and wellbeing as a result of enhancing the existing amenity value of both the South Bank and Victoria Embankment by providing a high quality publicly accessible green space that links these two areas of existing open space.

6.1.5 The Garden Bridge has been designed to enable access to a wide variety of users. It has easy access for wheelchair users through adequate path widths along all primary and the majority of secondary pathways, and suitably sized lifts provide step-free access. Measures have also been integrated into the design to

assist the visually impaired in navigating across the Garden Bridge. Seating has been specified that meets the needs of a wide variety of users including children and the elderly.

6.1.6 Enhanced opportunities to undertake active travel journeys, once the Garden Bridge is operational is likely to have positive effects on physical health as a result of increased levels of physical activity contributing towards a reduction in the risk of many chronic conditions such as heart disease, diabetes and obesity

6.1.7 At the operational phase opportunities for crime and the fear of crime have been reduced through the adoption of 'Secured by Design' principles (i.e. designing out secluded areas, careful consideration of lighting strategy and limiting dead ends). Reduction of the fear of crime is assessed to have positive effects on mental health and wellbeing and should encourage greater use of the Garden Bridge by more 'vulnerable' groups such as women, older people and people with disabilities.

6.1.8 The operational phase is assessed to result in positive effects on mental and physiological health as a result of increased opportunities for social interaction and new places to meet people.

6.2 Recommendations

6.2.1 A number of potential measures have been identified for future implementation by The Garden Bridge Trust that would further reduce any residual negative effects on health or maximise any potential opportunities to improve health. Recommendations include:

- Recommendations to enhance the value of the Garden Bridge for children and young people. This includes measures designed to engage them in informal play and education.
- Opportunities to further reduce the fear of crime during operation of the Garden Bridge through appropriate staffing levels and measures to make the Garden Bridge alcohol free.
- Measures during operation to increase the use of the Garden Bridge for community events, and volunteering which would further maximise the positive benefits for mental health and wellbeing that could be achieved.
- Identifying opportunities to source local employment during both construction and operation. This may be achieved through promotion of jobs in local job centres and schools/colleges.

6.3 Monitoring

6.3.1 On-going monitoring of Code of Construction Practice measures should be undertaken by the contractor to ensure that they have been effective in mitigating potential impacts in relation to traffic, dust, noise and vibration impacts on adjacent receptors, and particularly, sensitive receptors such as residential properties.

6.3.2 During operation of the Garden Bridge, it is recommended that The Garden Bridge Trust undertake, or commission another to undertake some monitoring work to assess whether the bridge is meeting its aim to be an exemplary initiative to improve the physical and mental health and wellbeing of its users. It is recommended that the Garden Bridge undertakes surveys of both pedestrian movements and wellbeing.

Appendix 1

Planning and policy review

Contents

1 National Policy

1.1 Government White Paper Saving Lives: Our Healthier Nation (1999).

1.1.1 In the White Paper Saving Lives: Our Healthier Nation, the Government made a commitment to apply health impact assessment (HIA) to all relevant key policies, so that the consequences for health can be considered when policies are developed and implemented. The White Paper also acknowledges a need for health impact assessment of policies, plans and projects at a local and regional level.

1.2 Government White Paper: Choosing Health – Making Healthy Choices Easier

1.2.1 This 2004 White Paper sets out the key principles for supporting the public to make healthier and more informed choices in regards to their health.

1.2.2 The paper sets out how the opportunities, support and information that people want to enable them to choose health should be made available. Furthermore it aims to inform and encourage individuals to help shape the commercial and cultural environment they live in so that it is easier to choose a healthy lifestyle.

1.2.3 It also considers non-health interventions on population health that should be incorporated before implementing policies (such as HIAs for examples) and afterwards through monitoring and evaluation.

1.3 Government White Paper – Healthy Lives, Healthy People: Our strategy for public health in England

1.3.1 This 2010 White Paper responds to Marmot's Fair Society Healthy Lives report (Final Report 2010) and adopts the framework for tackling the wider social determinants of health. It presents the government commitment to protecting the population from serious health threats; helping people live longer, healthier and more fulfilling lives; and improving the health of the poorest, fastest.

1.3.2 Local governments and communities are at the heart of health and wellbeing for their populations and tackling inequalities and they are responsible and accountable for creating healthy planning through planning, transport, schools and housing.

1.3.3 It has been noted that the Department for Communities and Local Government (DCLG) will support areas that streamline planning policy which aligns social, economic, environmental and health priorities into one place.

1.3.4 It also noted that health considerations are an important part of planning and that public health should be better integrated with areas such as social care, transport, leisure, planning and housing to keep people connected, active, independent and in their own homes and around the community.

1.4 National Planning Policy Framework

1.4.1 The National Planning Policy Framework (NPPF) was published in 2012 to set out the government's planning policies for England. It also provides a framework for local people and their accountable councils to produce their own distinct local and neighbourhood plans so it is of material consideration in planning decisions.

1.4.2 The NPPF suggests that proposed development should be assessed for any expected changes and barriers to health and wellbeing. It therefore encourages the preparation of an HIA for a planning application within paragraph 171 which states:

- *'Local planning authorities should work with public health leads and health organisations to understand and take account of the health status and needs of the local population (such as for sports, recreation and places of worship), including expected future changes, and any information about relevant barriers to improving health and well-being.'*

1.5 National Institute for Health and Care Excellence Public Health Guidance

1.5.1 The National Institute for Health and Care Excellence (NICE) sets the standards for high quality healthcare and encourages healthy living. It is used by the National Health Service (NHS), local authorities and those involved with delivering care and promoting wellbeing. It has published a range of public health guidance. A summary of some of the policies is provided below.

1.5.2 'PH8: Physical activity and the environment' (2008) provides evidence-based recommendations on improving the physical environment to encourage physical activity. These include increasing pedestrian access, prioritising active transport and increasing walking route networks.

1.5.3 'PH17: Promoting physical activity, active play and sport for pre-school and school-age children and young people in family, pre-school and community settings' (2009) provides guidance on promoting physical activity for these groups. It recommends

consulting these groups, high level strategic planning, methods for increasing physical activity and active travel and the provision of these facilities in new developments.

1.5.4 'PH31: Preventing unintentional injuries among children and young people under 15: road design and modification' (2010) provides guidance on the coordination of work to make road environments safer through engineering measures.

1.5.5 'PH41: Walking and cycling' (2012) sets out the guidance on how people can be encouraged to increase active travel and recreational walking and cycling undertaken, by reducing dangers and creating a more supportive environment.

2 Regional Policy

2.1 The London Plan and Revised Early Minor Alterations (REMA)

2.1.1 The London Plan[1] is the Mayor's Spatial Development Strategy for London. It deals with matters of strategic importance to Greater London, taking account of crosscutting themes including:

- reducing health inequality and promoting Londoners health;
- equality of opportunity; and
- London's contribution to sustainable development in the UK.

2.1.2 The London Plan provides direct support for Health Impact Assessment (HIA) of development proposals as Policy 3.2C states that:

- *'The impacts of major development proposals on the health and wellbeing of communities should be considered through the use of Health Impact Assessments.'*

2.1.3 The policy is not altered by the 'Revised Early Minor Alterations (REMA) to the London Plan October 2013'.

2.1.4 The objectives of the London Plan aim to ensure that London is among the best cities in the world to live in and key policy objectives, relevant to health, include to:

- improve the quality of Londoners' lives, health and welfare through better designed buildings, modern architecture and the defending and improving of green and open spaces;
- promote growth that improves the quality of life in London and tackles inequalities in health outcomes; and
- create a cleaner, safer, healthier and more attractive environment in all parts of London with '*an efficient and*

1 Greater London Authority, July 2011 The London Plan Spatial Development Strategy,

effective transport system which places more emphasis on walking and cycling and makes better use of the Thames.'

2.1.5 The REMA to the London Plan[2] pursue the delivery of multifunctional green infrastructure network through Policy 2.18 which would therefore secure a range of benefits including social benefits that promote individual and community health and wellbeing.

2.1.6 Policy 3.6 of the London Plan supports the development of good quality, well designed, secure and stimulating play and informal recreation space incorporating trees and greenery. This is aimed to improve the welfare of children and young people by ensuring they have safe access to these facilities to improve health and wellbeing.

2.1.7 Policy 3.10A of the London Plan amendments also supports new development which provides accessible health and social infrastructure and addresses the key health determinants by creating:

- *'opportunities for employment and economic development to meet the needs of all the community; improve access to green and open spaces and leisure facilities (including using the planning system to secure new provision); support safe and sustainable transport systems (including walking and cycling); reduce road traffic casualties; improve air quality; reducing noise, increase access to healthy foods; create places for children to play; and ensure there is a good array of local services.'*

2.2 The London Health Inequalities Strategy

2.2.1 The London Health Inequalities Strategy[3]sets out five core objectives for tackling health inequality in London:

- empower individuals and communities to improve health and wellbeing;
- improve access to high quality health and social care services particularly for Londoners who have poor health outcomes;
- reduce income inequality and the negative consequences of relative poverty;
- increase the opportunities for people to access the potential benefits of good work and other meaningful activity; and
- develop and promote London as a healthy place for all.

2.2.2 The strategy outlines the importance of HIA in decision making, supporting policy and identifying new ways of working. It also

2 Greater London Authority, 2013. Revised Early Minor Alterations to the London Plan published 11th October 2013,

3, Greater London Authority, April 2010 The London Health Inequalities Strategy

commits to leading by example and ensuring that *'major initiatives consistently evaluate potential negative or positive health impacts'.*

2.3 Health Issues in Planning Best Practice Guidance

2.3.1 The Greater London Authority's Health Issues in Planning Best Practice Guidance (BPG)[4] is referenced in policy 3.32 of the London Plan mentioned in Section 2.1.

2.3.2 The BPG provides guidance to local authorities on promoting better health through planning policy and development and introduces the *'link between how places are planned and developments delivered and the health of communities who live in them.'*

2.3.3 The significance of new developments, the importance of coordinated planning and the consideration of health impacts has been outlined as follows:

'Major developments ... should make a significant positive contribution to the health of Londoners. Health impacts should be considered at the very outset of developing planning proposals or strategies to ensure positive health outcomes.'

2.4 Healthy Urban Development Unit Planning for Health in London: The ultimate manual for primary care trusts and boroughs

2.4.1 The HUDU Planning for health in London manual[5] emphasises the role of local partnership approaches and local authorities in promoting healthier communities through the spatial planning system.

2.4.2 It supports the reasoning that there is a need to manage the relationship between a person's health and the social and environmental context within which they live. Furthermore it surmises that *'No spatial plan can be sound without addressing health issues'* and it specifically recommends using the HUDU Wider Determinants of Health model which has been used in this HIA.

4 Health Issues in Planning, Best Practice Guidance, Greater London Authority, June 2007

5 Planning for health in London: The ultimate manual for primary care trusts and boroughs, NHS London Healthy Urban Development Unit, 2009

2.5 All London Green Grid Supplementary Planning Guidance

2.5.1 The All London Green Grid (ALGG) promotes a shift from grey to green infrastructure to secure environmental, social and economic benefits.

2.5.2 The ALGG Supplementary Planning Guidance (SPG)[6] provides guidance on the implementation of Policy 2.18 of the amended London Plan mentioned in Section 2.1.5 to deliver a multifunctional green infrastructure network.

2.5.3 One of the key objectives of the ALGG SPG is the promotion of healthy living by improving access and enjoyment opportunities for the green space network and the provision of social infrastructure. This is undertaken at a landscape scale to provide a context for development and thus achieve greater local health impacts.

2.5.4 Implementation point 1 of the SPG highlights the need for stakeholders to put into place appropriate mechanisms to ensure that green infrastructure is protected, enhanced and managed to support the wider benefits, including health and wellbeing, across administrative boundaries.

2.6 Mayor's Transport Strategy

2.6.1 The strategy encourages transport enhancements which address health inequalities in London whilst implementing sustainable development and mitigating and/or adapting to climate change.

2.6.2 The Mayor's vision highlights the requirement for efficient and integrated transport that addresses some of the key health determinants by endorsing:

- physically active modes of transport including walking and a mode shift to cycling;
- new developments that are planned in a way to increase the attractiveness of walking and cycling;
- improved public transport and consistent way-finding;
- the provision of transport that is accessible, fair to users and offers value for money;
- safe and secure transport that contributes to improving quality of life and the environment; and
- transport that offers improved opportunities for the entirety of London.

6 Green infrastructure and open environments: The All London Green Grid (2012), Greater London Authority, March 2012

2.7 Improving the health of Londoners: Transport action plan

2.7.1 Transport for London's (TfL) Transport Action Plan[7] identifies that '*London's transport system has a highly significant role to play in helping tackle the major public health challenges our city faces'*.

2.7.2 The document identifies the role of transport in health in London as a positive one as it is the main way that people stay active as well as enabling Londoners to access jobs and services and travel to see friends and family.

2.7.3 The document reviews the role that transport can play in:

- Increasing physical activity;
- Improving air quality;
- Reducing the impacts of road traffic collisions;
- Reducing noise; and
- Improving access and reducing severance;

2.7.4 It particularly recognises the importance of walking and cycling that people do as part of their everyday routine in improving health. To deliver the biggest benefits from more walking and cycling '*we need to ensure that our streets invite people to walk and cycle whenever possible'*.

2.7.5 The plan also identifies ten actions for improving health through the work that TfL undertakes, including:

- Action 1: The use of the World Health Organisation Health Economic Assessment Tool (WHO HEAT) to quantify and where possible monetise the health impacts of projects and policies.
- Action 2: Building health into the development and assessment of policies and projects.
- Action 4: Assess actions against the public health evidence base.
- Action 5: Strengthen the Health Impact Assessment processes to ensure that opportunities to improve health as well as mitigate potential harms are identified.

2.8 Shaping Neighbourhoods Play and Informal Recreation Supplementary Planning Guidance

2.8.1 The Shaping Neighbourhoods: Play and Informal Recreation SPG[8] supports policies on shaping neighbourhoods to improve

7 Transport for London (2014). 'Improving the health of Londoners: Transport action plan'.

8 The Shaping Neighbourhoods: Play and Informal Recreation Supplementary Planning Guidance (2012), Greater London Authority

the health, wellbeing and personal development of children and young people.

2.8.2 The need for play and informal recreation space is linked to a number of the health determinants including:

- the application of lifetime neighbourhoods and the role that recreational spaces play in their creation;
- the provision of access to recreation space, particularly open space and nature; and
- the minimisation of inequalities between different socioeconomic groups by providing equal opportunities for all to access recreational facilities.

2.8.3 Implementation point 11 of the SPG also identifies the need to adopt standards in recreation space which contextualise the socio-economic and health status of the local community. It is hoped that this would encourage healthy lifestyles and therefore improve the health and wellbeing of the local community.

3 Local Policy

3.1 Westminster City Council

Westminster's City Plan: Strategic Policies

3.1.1 Westminster's City Plan: Strategic Policies was formally adopted on 13 November 2013 and informs planning decisions from that date. This document came about as a result of a review of the previous Core Strategy to ensure consistency with the National Planning Policy Framework (NPPF), the new London Plan and other changes to legislation and updates.

3.1.2 The key objectives are to *'To maintain and enhance the quality of life, health and well-being of Westminster's residential communities; ensuring that Westminster's residents can benefit from growth and change, providing more employment and housing opportunities, safety and security, and better public transport and local services; to work with our partners to foster economic vitality and diversity, improved learning and skills, and improved life chances in areas of deprivation.'*

3.1.3 Policy S19: Inclusive Local Economy and Employment supports new developments which contribute towards the provision of employment, training and skills development for local residents and ensure that local residents can benefit from these opportunities.

3.1.4 Policy S28: Design highlights the need for sustainable, inclusive design for development which contributes to climate change mitigation and minimises the use of resources whilst providing an extended and adaptable lifespan.

3.1.5 Furthermore Policy S29: Health, Safety and Well-Being also sets out that *'Development should ensure that the need to secure a healthy and safe environment is addressed, including minimising opportunities for crime, including the risk of terrorism, and addressing any specific risks to health or safety from the local environment or conditions. Developments should also maximise opportunities to contribute to health and well-being, including supporting opportunities for improved life chances and healthier lifestyle choices.'*

3.1.6 New social and community facilities, particularly on large scale developments are also encouraged through Policy S34: Social and Community Infrastructure.

3.1.7 The protection and enhancement of the Blue Ribbon Network, of which the site is a part of, has also been encouraged by Policy S37: Westminster's Blue Ribbon Network. Improved access to the waterfront, particularly for pedestrians, enjoyment of the waterfront, improving education, enhancing landscapes

and encouraging sustainable modes of transports are the priority enhancements for the area.

3.1.8 Pedestrian movement is also prioritised in Policy S41: Pedestrian Movement and Sustainable Transport which states that all new development will *'prioritise pedestrian movement and the creation of a convenient, attractive and safe pedestrian environment, with particular emphasis in areas with high pedestrian volumes or peaks.'*

3.1.9 Policy S43: Major Transport Infrastructure confirms support for transport infrastructure and public realm improvements to mitigate the impact of increased passenger numbers. In particular those which facilitate pedestrian movement and meet the needs of those with disabilities and other vulnerable groups and those which encourage residents to make more sustainable choices. Furthermore improvements to *'the convenience, connectivity, attractiveness and safety of Westminster's linear walking routes, including the Blue Ribbon Network and connections within and between Westminster's open spaces'* is highlighted as a key priority.

Westminster Joint Health and Wellbeing Strategy

3.1.10 The Joint Health and Wellbeing Strategy sets out the priorities and actions for the period 2013 to 2016 to improve the health and wellbeing of people living in, working in and visiting the City of Westminster. The vision is for all people in the City of Westminster to enjoy a healthier city and healthier life and it is supported by specific priorities.

3.1.11 Key issues within Westminster include:

- high levels of international migration;
- highest level of rough sleepers of anywhere in the country;
- tens of thousands of people who live in the City for short-periods or on a part-time basis who are not included in the resident population;
- high variability in life expectancy across the borough; and
- high population turnover at approximately 30% per year.

3.1.12 Clear goals have been set for the next 15 years until 2028 and they include:

- improve the environment in which children and young people live, learn, work and play;
- ensure that more people live healthily for longer and fewer die prematurely; and
- provide a safe, supportive and sustainable Westminster where all are empowered to play as full a role as possible.

3.1.13 These goals are being met by specific priorities. Such of which are linked to the health determinants of the HIA. Priorities 1 and

2 aim for children and young people (respectively) to have the best start in life and have a healthy adulthood through the provision of adequate healthcare services and projects to maximise health outcomes such as healthy childhood weight, mental wellbeing and the prevention of youth violence.

3.1.14 Priority 3: Supporting Economic and Social Wellbeing and Opportunity specifically promotes the benefits of education, training, employment and volunteering to improve physical and mental health and wellbeing.

The Westminster City Plan 2006-2016

3.1.15 This is Westminster City Council's local plan for Westminster which sets the vision and describes the actions that are being undertaken to make the City of Westminster *'the best place to live, work and visit in the UK'*.

3.1.16 The cross cutting issues that underpin the objectives are promoting equalities, children and young people, health and wellbeing and culture, all of which are closely aligned with many of the health determinants.

3.1.17 Furthermore South Westminster, where the site is located has neighbourhood renewal priorities identified and they are:

- improving leisure facilities with a focus on young people, older people, estates and black and minority ethnic communities;
- improving crime and anti-social behaviour reporting;
- more support and signposting around skills and employment for vulnerable and isolated groups;
- develop new ways to support resident involvement, engagement and community cohesion projects; and
- delivery of a healthy living centre.

Open Space Strategy SPD

3.1.18 The Open Space Strategy was adopted in 2007 to improve the quality, management, accessibility and usage of parks and open spaces and provide new facilities where there are deficiencies.

3.1.19 It states that the vision for open space is to *'To improve our environment by becoming a more sustainable, greener city, to improve wellbeing and health, and make the city a better place for children and young people'*.

3.1.20 Particular priorities for open space have been highlighted and they reflect many of the health determinants. The priorities for investment and action include:

- addressing access issues;
- provision of open space for older children and teenagers;

- maintaining biodiversity and addressing areas of wildlife deficiency;
- increased partnership working and community involvement; and
- designating and extending green routes to create a more integrated and accessible network of open spaces.

Designing Out Crime in Westminster SPG

3.1.21 This SPG, published in 1997, addresses how crime prevention measures should be incorporated into a development from the start of the design process so as to reduce crime and improve safety and security.

3.1.22 It highlights that suitable solutions should be designed through natural surveillance and crime prevention measures for specific buildings or public and private land, dependent on the location of the site, local crime patterns and the nature of the development.

3.1.23 The main features which can be designed to reduce opportunities for crime and thus the fear of crime have been highlighted as:

- layout;
- land use;
- parking;
- open space and landscaping;
- boundary treatment; and
- lighting.

Children and Young People's Plan 2009-2011

3.1.24 The most recently published Children and Young People's Plan has been set to improve health and wellbeing outcomes for children and young people in the City of Westminster.

3.1.25 The vision is to provide children and young people with the opportunity to reach their full potential so that they can be healthy, stay safe, make a positive contribution to the local community and achieve economic wellbeing.

3.1.26 The key priorities are to:

- improve physical and emotional health and wellbeing;
- promote healthy lifestyles;
- improve safety and security;
- increase training, educational opportunities and opportunities for young people to behave positively by engaging with and contributing to their local community.

Joint Commissioning Strategy for Older People 2010-2013

3.1.27 The Joint Commissioning Strategy for Older People 2010-2013 sets out the vision for the health and wellbeing of older people in WCC, particularly by promoting active health and inclusivity.

3.2 City of London

City of London Core Strategy

3.2.1 The City of London Core strategy was adopted in September 2011 and contributes to planning decisions from that date until the new Local Plan is adopted in 2015.

3.2.2 Safety and Security is promoted in Policy CS3: Security and Safety which aims to *'ensure that the City is secure from crime, disorder and terrorism, has safe systems of transport and is designed and managed to satisfactorily accommodate large numbers of people'.*

3.2.3 Climate change is addressed in Policy CS15: Sustainable Development and Climate Change which requires development to minimise carbon emissions, positively address the local environment including air quality, noise, flood risk and biodiversity. Climate change adaptation and the minimisation of resources are also encouraged.

3.2.4 Policy CS16: Public Transport Streets and Walkways encourages good transport infrastructure that improves the sustainability and efficiency of transport to, from and through the City. Furthermore improving conditions for safe and convenient walking and cycling is also being encouraged by the policy.

3.2.5 The creation of healthy urban environments and lifestyles are encouraged through Policy CS19: Open Spaces and Recreation which states that City of London will *'encourage healthy lifestyles for all the City's communities through improved access to open space and facilities, increasing the amount and quality of open spaces and green infrastructure, while enhancing biodiversity'.* Access should be available for all residents within and outside the borough to meet open space and provide affordable recreation opportunities.

3.2.6 Social cohesion and accessibility is highlighted through Policy CS22: Social Infrastructure and Opportunities which aims to '*maximise opportunities for the City's residential and working communities to access suitable health, social and educational facilities and opportunities, while fostering cohesive communities and healthy lifestyles'.* Furthermore the opportunity to improve skills and education of the local community is also encouraged.

Draft City of London Local Plan

3.2.7 The draft City of London Local Plan was published in December 2013 and it will replace the City of London Core Strategy in early 2015.

3.2.8 Aside from updating the planning obligations mentioned previously the draft Local Plan further addresses the health determinants through Policy DM10.4 Environmental Enhancement. This policy states that City of London will work in partnership with TfL and other organisations to design and implement new transport schemes which are of a high standard of design, sustainability and landscaping.

3.2.9 Policy DM10.8: Access and Inclusive Design also addresses inequalities by aiming to *'achieve an environment that meets the highest standards of accessibility and inclusive design in all developments (both new and refurbished), open spaces and streets.'*

3.2.10 Climate change is addressed through Policy DM15.1: Sustainability Requirements, DM15.2 Energy and CO2 Emissions Assessments, DM15.3 Low and Zero Carbon Technologies, DM15.4 Offsetting of Carbon Emissions and DM15.5 Climate Change Resilience and Adaptation, all of which aim to minimise anthropogenic influence and provide more resilient development.

3.2.11 Policy DM16.4 Facilities to Encourage Active Travel also states that '*Ancillary facilities must be provided within new and refurbished buildings to support active transport modes such as walking, cycling and running*.'

Draft City of London Joint Health and Wellbeing Strategy

3.2.12 The Draft Joint Health and Wellbeing Strategy was published in May 2013 and it agrees what the greatest health issues are in the community and how these can be addressed.

3.2.13 Key issues identified include:

- increasingly international worker and resident community and an ageing resident population;
- poor air quality with high levels of particulate matter and nitrogen dioxide;
- lack of open space;
- high levels of rough sleepers with problems relating to alcohol and mental health;
- pockets of worklessness concentrated into particular geographical areas and housing estates; and a similar pattern in terms of deprivation;
- high rate of alcohol related crime;

- high smoking rate amongst workers; and
- low rates of physical activity amongst resident population

3.2.14 It has been noted that in order to improve the health of the whole community the broader context of people's lives needs to be considered including income, education; social groups; the place where they live; the air that they breathe; the beliefs they have about their own health and their ability to make changes as well as the individual biological factors that may influence their health.

3.2.15 The strategy outlines priorities, some of which are particularly relevant to the proposed development, to combat the challenge for residents to live healthy lives and improve resident access to health services including:

- increasing social connectivity;
- increasing physical activity; and
- reducing stress, anxiety and depression.

The City Together Strategy: The heart of a world class city 2008-2014

3.2.16 The City Together Strategy has been prepared by the local strategic partnership on behalf of all of the City's communities to guide strategies and plans to help them contribute to sustainable development.

3.2.17 Some of the key aspirations are:

- *'To protect and improve health and wellbeing of our communities, by encouraging healthy lifestyles and taking a preventative approach through accessible health promotion and early intervention.*
- *To improve people's health, safety and welfare within the City's environment through proactive and reactive advice and enforcement activities.'*

3.2.18 Furthermore it states that one of the medium term priorities for the strategic partnership is to encourage healthy lifestyles and protect and improve the local community's health and wellbeing. This can be achieved by ensuring that building and public spaces are designed to promote health, reduce crime and make people feel safe.

Open Space Strategy 2008

3.2.19 The Open Space Strategy for City of London was developed during 2008 with a vision to enable *'The creation of a network of high quality and inspiring open spaces which helps ensure an attractive, healthy, sustainable and socially cohesive place for all the City's communities and visitors.'*

3.2.20 It notes that there is a lack of existing publicly accessible open space and the majority of the open space was generally established from the damage caused by World War II and the Great Fire of 1666, therefore much of the open space is of historic interest and amenity value.

3.2.21 It is hoped from this policy that opportunities could be taken to incorporate features that encourage residents and workers that visit City of London to adopt a healthy lifestyle and that facilities which help adults to stay healthy can be included in all future development.

Safer City Partnership Plan 2011-2014

3.2.22 The Safer City Partnership Plan has set out priorities which have been targeted to promote an active response by the community to reduce crime.

1.1.1 Anti-social behaviour and the night-time economy are highlighted as key issues in the area and they have been targeted to improve safety and security for the local residents.

1.1.2 This policy also highlighted the related partnership and support arrangement with the Health and Wellbeing Board to jointly take ownership and deliver priorities to improve the safety, health and wellbeing for local residents.

Children and Young People's Plan 2013-2015

3.2.23 The Children and Young Person's Plan outlines the priorities for providing services to children and young people during the next three years to '*ensure that every child and young person in the City of London is safe, happy, healthy and able to achieve their full potential'.*

3.2.24 Strategic priority 4 – Healthy Living aims to ensure that poverty does not have a negative impact on children and young people's outcomes in later life. It also hopes to reduce health inequalities and support and empower communities to make a positive contribution and increase social cohesion.

3.2.25 Furthermore Strategic Priority 7 – User Engagement also aims to improve opportunities for children and young people to be actively involved in decision making for and about them.

3.3 London Borough of Lambeth

Lambeth Core Strategy

3.3.1 The Lambeth Core Strategy was adopted in January 2011 to set the spatial strategy, vision and strategic objectives to be achieved through decisions.

3.3.2 The strategic objectives are set out in Policy S1: Delivering the Vision and Objectives. The strategic objectives include:

- accommodating population growth;
- achieving economic prosperity and opportunity for all;
- tackling and adapting to climate change;
- providing essential infrastructure;
- promoting community cohesion and safe, liveable neighbourhoods; and
- creating and maintaining attractive, distinctive places.

3.3.3 Policy S4: Transport specifically states the requirement for connectivity improvements and for the development of transport to be *'appropriate to the level of public transport accessibility and capacity in the area, or to contribute towards increasing public transport accessibility and capacity where this cannot be achieved through pooling of planning obligation contributions with Transport for London or other agencies' transport project funding as appropriate'.*

3.3.4 Policy S5: Open Spaces aims to protect and improve open space by *'Improving the quality of, and access to, existing open space, including the range of facilities available and its bio-diversity and nature conservation value and heritage value, through various means including the implementation of the Lambeth Open Spaces Strategy. Where appropriate in major developments, financial contributions will be sought towards improvements in the quality of, and access to, open space in the borough'.*

3.3.5 Policy S7: Sustainable Design and Construction sets the standards required for future developments including emission reductions, low and zero carbon development, energy efficiency and environmental performance to ensure resilience during the construction and operation of proposed developments.

3.3.6 Sustainability is further supported by Policy S9: Quality of the Built Environment which aims to address neighbourhood amenity by maintaining and improving the liveability of London Borough of Lambeth and creating safe and secure sustainable communities.

Lambeth Local Plan Proposed Submission (Nov 2013)

3.3.7 The Lambeth Local Plan Proposed Submission was published in November 2013 and sets out planning policies for Lambeth to guide growth in housing and jobs, infrastructure delivery, place-shaping and the quality of the built environment over the next 15 years. Once adopted, it will replace the Lambeth Core Strategy 2011 and remaining saved policies in the Unitary Development Plan 2007. Along with the London Plan, it will form the new statutory development plan for the borough.

3.3.8 Policy ED7: Evening economy and food and drink uses looks at supporting the evening economy whilst making sure that any adverse impact on local amenity is minimised.

3.3.9 Policy T1: Sustainable Travel highlights that Lambeth will prioritise walking and cycling over all other forms of transport.

3.3.10 Policy T2: Walking identifies that Lambeth will improve conditions for pedestrians and make walking a safer, quicker, more direct and more attractive form of travel. It highlights that development proposals should identify key routes and destinations and assess existing and predicted pedestrian flows to and from the site.

3.3.11 Policy EN1: Open space aims to increase the quantity of open space in the Borough……by linking existing spaces.

3.3.12 Policy EN2: Local food growing and production supports the use of land and buildings as new allotments and for local food growing spaces. The incorporation of community gardens, allotments, orchards and innovative spaces for growing food, including green roofs, will be encouraged and supported in major new developments where possible and appropriate.

3.3.13 Policy EN7: Sustainable waste management supports the approach to drive waste management up the waste hierarchy in accordance with national and regional policy and targets, and in particular the efficient use of resources, the reuse of materials and resources, composting and the recovery of energy from materials. It also emphasises that on-site waste management facilities should be incorporated into all major development proposals unless it is demonstrated that provision is not viable or the location renders the site unsuitable for such facilities.

3.3.14 Policy Q1: Inclusive environments states that Lambeth will secure new development which is compliant with current best practice standards for inclusivity. All new development should be accessible to all, including disabled people, older people, other people with mobility constraints and children. It expects applicants to show in their design and access statements how their proposals achieve inclusive design.

3.3.15 Policy Q3: Community safety states that in order to create a safe borough for all users, the Council will expect development to utilise good design to design-out opportunistic crime, anti-social behaviour, and fear of crime in a site-specific manner, based on an understanding of the locality and likely crime and safety issues it presents. Applicants should engage in early pre-application discussions where possible; show in their design and access statement that the approach taken to the design has been informed by an understanding of community safety issues in the locality and is designed to meet established best-practice standards in order to address these in a manner appropriate to the local context; and meet the standards and objectives of the ‘Secured By Design’ initiative. Major

development proposals should also address resilience to terrorism.

3.3.16 Policy Q4: Public art highlights that the Council will encourage the provision of new public art in large-scale redevelopment schemes and landmark sites and public parks / public spaces (especially the South Bank).

3.3.17 Policy Q24: River Thames. The policy highlights that when making proposals along the River Thames applicants should be able to show that their proposals enhance the character of the river frontage, views from the river and from the opposite bank; maintain and create publicly accessible spaces routes along the river for a continuous riverside walkway; and reinforce connections from the city to the river.

3.3.18 The plan also highlights the proposed Garden Bridge location on plans identifying the potential development site of 'ITV Centre and Gabriel's Wharf Upper Ground SE1' (Site 9).

Draft Lambeth Co-operative Health and Wellbeing Strategy (A transitional strategy for 2013-2014)

3.3.19 The draft Health and Wellbeing Strategy provides the commitments to protect and improve health and wellbeing, reduce health inequalities and deliver economic and social benefits to those who live, work and spend part of their time within London Borough of Lambeth.

3.3.20 Key issues for health in the London Borough of Lambeth include:

- Low levels of physical activity in children;
- High levels of homelessness;
- Amongst one of the highest levels of violence in London and England; and
- Lambeth, Southwark and Lewisham have the highest proportions of people with HIV in the UK,

3.3.21 The strategy has a shared vision for London Borough of Lambeth to be a place where:

- health and well-being is improving for all, especially for the most vulnerable and excluded;
- people are supported to be the best they can be and to feel good about themselves;
- everyone is able to make a contribution and every contribution is valued irrespective of an individual's background, societal status or disability; and
- people feel safe.

3.3.22 The strategy sets out that a cooperative approach should be undertaken during assessment and planning processes so that London Borough of Lambeth can:

- *'work with commissioners to incorporate health and well-being and the reduction of health inequalities into their work and the development of 'co-operative commissioning' (e.g. through commissioning for social value and common strategic framework for assessment and planning); and*
- *identify key complex health and well-being issues for Lambeth and use the common strategic framework to develop approaches that consider issues in their entirety and agree actions based on the unique contributions of stakeholders (e.g. individuals, communities, services, voluntary sector organisations and businesses).'*

3.3.23 Furthermore opportunities addressing health and wellbeing, equality and equity will be identified so that London Borough of Lambeth can *'link across sectors and services to address factors that impact on health and wellbeing'.*

Our Vision 2020: Lambeth's Sustainable Community Strategy

3.3.24 The Sustainable Community Strategy provides an approach to improving the quality of life for people who live and work in London Borough of Lambeth to tackle problems as a community.

3.3.25 Worklessness has been highlighted as a key challenge. The health and wellbeing challenges and improving the quality of life could:

- provide greater financial resources so people can live healthier lives;
- reduce poverty through improved family incomes;
- break benefit dependency;
- facilitate workplace interaction of people from different communities which will promote community cohesion;
- improve living standards which will reduce people's incentive to commit certain types of crime;
- enable vulnerable communities to become economically active through targeted support services/projects;
- allow access to better skills and education for all residents; and
- facilitate better family support services for single parents to become economically active.

3.3.26 Improved economic wellbeing via employment, increased inclusive opportunities for education and training in conjunction with the provision of safe and cohesive communities where

residents can play an active role are all targeted outcomes of the policy.

3.3.27 The promotion of healthier lives, improvements to mental health and reduction of health inequalities are key to meeting these objectives which are said to be crucial in reducing worklessness and improving the health and wellbeing of local residents.

Lambeth Open Space Strategy

3.3.28 The Open Space Strategy for London Borough of Lambeth was published in 2004 and updated in 2007.

3.3.29 Both policy documents noted that there are large areas of the London Borough of Lambeth lacking in open space and that *'parks and open spaces will contribute to sustainable regeneration, social inclusion and healthier and safer communities'.*

3.3.30 The 2007 Strategy stated that parks and open space '*must be a healthy, safe and secure place for all members of the community to use. Relevant issues must be addressed in management plans and implemented on the ground.'*

The Safer Lambeth Partnership Plan (2011-2012)

3.3.31 The Safer Lambeth Partnership Plan (2011-2012) is the most recent plan that sets out and addresses social, economic and environmental problems which undermine community safety in London Borough of Lambeth. It outlines the evidence-based priorities, proposed objectives, key actions and supporting milestones for the Partnership to focus on for the current year.

3.3.32 Generally crime has decreased in London Borough of Lambeth, however it stated that *'Community safety remains a top priority for our residents, and it is more important than ever in a time of reduced resources that we work effectively together to prevent and tackle crime and anti-social behaviour, pooling resources and intelligence wherever possible'.*

3.3.33 Tackling acquisitive crime hotspots and anti-social behaviour are key priorities for reducing neighbourhood crime and the fear of crime in the local community.

Children and Young People's Plan 2011-2014

3.3.34 The Children and Young Person's Plan for Lambeth aims to safeguard and protect children and *'To ensure Lambeth's children and young people are happy, healthy, safe and can achieve their full potential, by providing effective support to all, with special attention given to those who are most vulnerable and at risk.'*

3.3.35 It recognises the particular needs for children and young people in the area including childhood obesity and healthy eating, involvement in crime, gangs and anti-social behaviour,

worklessness and challenges for educational attainment and knowledge sharing.

3.3.36 Early intervention and the early identification of issues is noted as a priority to ensure the optimum design will provide high quality outcomes for children's health and wellbeing.

An Older People's Strategy for Lambeth (2009-2014)

3.3.37 The Older Person's Strategy aims to allow older people in the London Borough of Lambeth to *'live a full and active life during which they are healthy, independent, involved in their communities and treated with dignity and respect. They can expect to feel safe and confident in their homes and their local communities. Older people will be able to choose from a wide range of quality health, care, housing, cultural, leisure and financial services.'*

3.3.38 Preventing crime and addressing older people's fear of crime, increasing opportunities for older people to make a positive contribution to the local community, increasing access to culture, leisure, faith and educational facilities and improving economic wellbeing have been noted as the targeted measures to improve the health and wellbeing of the older population.

3.4 London Borough of Southwark

Core Strategy

3.4.1 The Core Strategy for Southwark was adopted in April 2011 and it sets out how the London Borough of Southwark will change up to 2026 to be the type of place set out in the Sustainable Community Strategy.

3.4.2 Strategic objective 1C: Be Healthy and Active reflects the aim to deliver sustainable growth in Southwark by increasing access to good health, education, sports, leisure and community facilities. It assumes that healthy lifestyles are encouraged by open spaces, nature, opportunities for active travel and access to fresh healthy food.

3.4.3 Strategic Policy 2: Sustainable Travel encourages walking and the use of public transport to create 'safe, attractive, vibrant and healthy places for people to live and work by reducing congestion, traffic and pollution'. Improving transport options can have positive impacts on the quality of life for people and large developments that are very accessible by walking, cycling and public transport will be encouraged by London Borough of Southwark. Furthermore the use of the River Thames as a transport link is also encouraged to improve links between the London Borough of Southwark and the north side of the River Thames.

3.4.4 Strategic Policy 4: Places for learning, enjoyment and healthier lifestyles aims to create *'a wide range of well used community facilities that provide spaces for many different communities and activities in accessible areas. Development will help create safe, healthy and mixed communities.*' The provision of educational opportunities and facilities that encourage physical activity and promote healthier lifestyles are key to meeting this outcome and therefore improve social cohesion and wellbeing.

3.4.5 The need for health impact assessment for major developments was also specifically outlined in Strategic Policy 4 as a method for promoting public health in London Borough of Southwark.

3.4.6 Biodiversity and green space are considered in Strategic Policy 11: Open spaces and wildlife as London Borough of Southwark aims to improve and protect open space, green corridors and habitats to increase access to nature. New development should help to improve the quality of and access to open spaces, trees and play areas in the areas deficient of these facilities. It is hoped that this can help encourage physical activity and increase tranquillity and recreation opportunities. Local food growing, community gardens and composting opportunities are also encouraged by this policy to promote healthy lifestyles and reduce environmental impacts.

3.4.7 Strategic Policy 12: Design and Conservation aims for development to *'achieve the highest possible standards of design for buildings and public spaces to help create attractive and distinctive places which are safe, easy to get around and a pleasure to be in'*. The Thames Policy Area, including the riverfront and the River Thames is noted as a particularly sensitive area.

3.4.8 Strategic Policy 13: High Environmental Standards addresses the way in which development '*respects the limits of the planet's natural resources, reduces pollution and damage to the environment and helps us adapt to climate change*.' Sustainable standards, the minimisation of resources and energy efficiency are highlighted as particularly important factors to consider.

Joint Health and Wellbeing Strategy 2013-14

3.4.9 The Health and Wellbeing Strategy focuses how the different partners in London Borough of Southwark can work together to tackle the biggest health and wellbeing challenges by optimising the used of limited resources to make shared decisions in line with the Strategy.

3.4.10 The key issues for health in the London Borough of Southwark include:

- rising birth rate contributing to an increasingly young population;

- significant inequalities across the borough with marked contrasts of poverty and wealth;
- London's highest rate for health-related out-of-work claims;
- a higher rate of child poverty than nationally;
- homeless rate more than double the national average;
- high rates of childhood obesity;
- significantly high numbers of smoking attributable deaths, and a doubling over the past decade of the number of hospital admissions relating to alcohol misuse; and
- High rates of HIV and sexually transmitted diseases.

3.4.11 The following vision has been outlined by London Borough of Southwark

- '*Every child, family and adult has improved health and wellbeing, and accesses a choice of high-quality local integrated services that meet their needs.'*

3.4.12 The following four priority areas were identified in the previous 'shadow year' where the health and wellbeing board were operated in shadow form for a year before being established in April 2013:

- prevention and reduction of alcohol-related misuse;
- coping skills, mental health and wellbeing;
- early intervention and families; and
- healthy weight and exercise.

3.4.13 Three priority objectives were identified to build on the learning from the shadow year. The aims of Priority 1: Giving every child and young person the best start in life aims to improve education, early adulthood employment opportunities, mental wellbeing, youth crimes rates, physical activity and healthy eating.

Southwark 2016: Sustainable Community Strategy

3.4.14 The Sustainable Community Strategy sets a framework to reduce inequalities, promote talents and aspirations within the community, increase diversity, promote social cohesion and make the community more resilient by addressing climate change concerns.

3.4.15 One of the key goals is to improve life chances for individuals' by policy and interventions to create social cohesion and minimise inequalities so that all individuals should:

- achieve economic wellbeing;
- achieve their educational potential;
- be healthy;

- stay safe;
- enjoy cultural and leisure opportunities; and
- value diversity and be active and responsible citizens.

3.4.16 Another goal is to make the London Borough of Southwark a better place for people so that it has:

- localities of mixed communities;
- the sustainable use of resources;
- more and better housing;
- infrastructure for a vibrant economy; and
- a liveable public realm.

3.4.17 The delivery of public, private and voluntary sector services should be integrated, accessible, efficient and modern to reflect community needs.

3.4.18 The key goals and priorities for each of the goals which have been developed in consultation with the local community are therefore closely linked with many of the health determinants.

Open Space Strategy 2013

3.4.19 The Open Space Strategy provides a framework for the provision of open space by setting the needs and priorities for different types of open space, the standards for each type and the key priorities for investment and improvement.

3.4.20 The northern parts of London Borough of Southwark were among the most deprived of open space and they have the greatest need for good quality open space which can be easily accessed by foot. Furthermore the development of open space in this area should be balanced between tourism, business and the needs of local residents.

3.4.21 The development of community gardens were seen as an important resource for the community in providing a space for active learning that is accessible to all.

3.4.22 The provision of recreational opportunities and amenity spaces are also priorities to meet the needs of the local community.

3.4.23 Specific objectives have been grouped around key themes including:

- enhancing the provision to meet the needs of the increasing and changing population;
- making significant contributions towards the health and wellbeing of the local community;
- encouraging regeneration;
- enhancing biodiversity;
- encouraging community cohesion;

- tackling inequalities;
- providing educational and culture resources;
- contributing towards the designation and significance of heritage assets; and
- mitigating climate change.

3.4.24 Green infrastructure, green chains, networks and grids, amenity spaces, linkage routes between existing open space, semi natural green spaces and alternative gardening projects are highlighted as some of the types of open space that are encouraged by London Borough of Southwark.

Safer Southwark Partnership Rolling Action Plan 2013-2015

3.4.25 The Safer Southwark Partnership Rolling Action Plan is the community safety strategy to tackle crime, substance misuse and the fear of crime.

3.4.26 In previous years the Plan notes that crime and the fear of crime have reduced in London Borough of Southwark, however violence, robbery and knife crime rates are high.

3.4.27 The key areas for delivering change to reduce crime and the fear of crime include reducing antisocial behaviour, offending and substance misuse, tackling violence, particularly against women and girls and building more sustainable communities.

Children and Young People's Plan 2013-16

3.4.28 The Children and Young People's Plan sets out the framework to achieve the London Borough of Southwark vision that *'Every child, young person and family in Southwark thrives and is empowered to lead a safe and healthy life'*

3.5 London Borough of Camden

Camden Core Strategy 2010-2025

3.5.1 The London Borough of Camden's Core Strategy was adopted in 2010 and it sets out the key elements of the Council's planning vision and strategy for the borough.

3.5.2 It has been prepared to align with the overall vision that *'Camden is a borough of opportunity'* and to meet the strategic objectives including:

- a sustainable Camden that adapts to a growing population;
- a strong economy that includes everyone;
- a connected Camden community where people lead active, healthy lives; and
- a safer Camden that is a vibrant part of our world city.

3.5.3 Policy CS2: Growth areas refers to the nearby growth area of Tottenham Court Road and Holborn where the council is expecting growth and development which provides appropriate links to and benefits for surrounding areas and communities.

3.5.4 Policy CS3: Other highly accessible areas refers to areas in Central London where London Borough of Camden promotes appropriate development including community facilities and the provision of facilities that are suitable for the likely significant demand for travel. London Borough of Camden are ensuring that development in these areas respects the surrounding area, provides environmental improvements and local benefits where appropriate and contributes towards amenity and community safety.

3.5.5 Training and employment are encouraged by Policy CS8: Promoting a successful and inclusive Camden economy. Local enterprise, employment and training schemes are supported in conjunction with creative and cultural businesses. New developments which support tourism and other employment generating uses such as leisure, retail, health and education are also encouraged.

3.5.6 Policy CS9: Achieving a successful Central London seeks to ensure that development in central London contributes to social, economic and cultural characteristics while improving transport connections, community safety and managing amenity and supporting community facilities for local residents.

3.5.7 London Borough of Camden also encourage the maintenance and improvement of community, leisure and cultural facilities to support the growing population through Policy CS10: Supporting community facilities and services.

3.5.8 Policy CS11: Promoting sustainable and efficient travel addresses how the council are promoting the delivery of transport infrastructure and the availability of sustainable transport choices to support the growth of the population. Improvements to encourage walking, cycling and public transport use in conjunction with improvements to public spaces to link London Borough of Camden are encouraged to increase the overall capacity.

3.5.9 Climate change is considered in Policy CS13: Tackling climate change through promoting higher environmental standards. The policy specifically encourages adaptation and mitigation for climate change, local energy generation, the minimisation of flood risk and carbon reduction for new developments in order to reduce the effects of climate change.

3.5.10 Open spaces are addressed in Policy CS15: Protecting and improving our parks and open spaces and encouraging biodiversity. Efforts to tackle open space deficiencies and developments that protect and enhance open space and nature are encouraged.

3.5.11 Policy CS16: Improving Camden's health and wellbeing seeks improvements to health and wellbeing by reducing health inequalities and implementing the Air Quality Action Plan to reduce air pollution levels.

3.5.12 Safety, security and crime are addressed in Policy CS17: Making Camden a safer place which aims to tackle crime, fear of crime and anti-social behaviour and encourage development that incorporate design principles and measures that contribute to community safety.

Joint Health and Wellbeing Strategy 2012-2013

3.5.13 The Health and Wellbeing Strategy for the London Borough of Camden was published in 2012 as a collaborative approach to solve the health challenges in London Borough of Camden.

3.5.14 In general health has improved in recent years in London Borough of Camden, however health outcomes are unequally distributed and they are closely associated with deprivation levels. The vulnerable groups are noted as black, minority and ethnic groups, those on lower incomes, people with mental health and learning disabilities.

3.5.15 Complex families (including those with particularly vulnerable children) which use a wide range of council and NHS services are a priority for London Borough of Camden. London Borough of Camden support the provision of information, support and services, education, a safe home and community to improve the quality of lives.

3.5.16 London Borough of Camden also state that supporting action of weight management and healthy living is a key priority to reduce life limiting conditions such as diabetes, heart disease and breathing problems and cancers which are frequently concurrent with fewer opportunities for healthy eating and exercise.

Camden Together: Camden's Community Strategy 2007-2012

3.5.17 This is the most recent sustainable community strategy which sets out the shared vision for the future of the London Borough of Camden so that it can be *'a borough of opportunity'*.

3.5.18 The key outcomes are:

- A sustainable Camden that adapts to a growing population - London Borough of Camden will find ways to adapt to Camden's growing population while protecting, promoting and enhancing the environment for us and for future generations.
- A strong Camden economy that includes everyone - the economy will be stronger and more Camden residents,

especially young people, will have the skills, education and training to take part in the job market.

- A connected Camden community where people lead active, healthy lives - There will be a greater sense of community and individuals will be supported to be active citizens who can influence local decisions and lead healthy lives.
- A safe Camden that is a vibrant part of our world city – It will be a safer place where local people can benefit from cultural and leisure opportunities.

Community safety partnership priorities

3.5.19 London Borough of Camden community safety team have set the key areas which are to be addressed during 2013/14 and they are:

- the management of offenders and perpetrators;
- services to those people who may be vulnerable to being victims of crime; and
- the management of problematic locations.

3.5.20 The four priorities for addressing these areas have also been outlined and they include:

- antisocial behaviour;
- domestic and sexual violence;
- night time economy; and
- serious youth violence and drugs.

Change for children and families 2012

3.5.21 Change for children and families was published in 2012 to set out how the children's trust will work together to improve outcomes for children and young people in London Borough of Camden.

3.5.22 It has outlined the key outcomes which include

- improving outcomes for families with multiple, complex needs;
- eliminating child poverty and mitigating the impact of poverty on children and families;
- encouraging children to have a healthy weight and healthy attitude in food and exercise;
- improving outcomes for vulnerable children and young people, particularly those with disabilities, special education needs and complex needs; and
- improving employment and training outcomes for children and young people.

A borough of opportunity for people in their 50s and beyond 2008-13

3.5.23 This strategy outlines how London Borough of Camden will meet the needs of the older population over the age of 50 and provide them with opportunities so that they can have the best quality of life.

3.5.24 The key outcomes are outlined that people in later life will:

- have reliable and accessible transport available, to lead active and fulfilled lives;
- have information about services, activities and opportunities in ways that everyone can understand;
- feel involved, influential and part of their community;
- have access to arts, culture and learning;
- be as healthy, both physically and emotionally, as possible;
- feel safe and secure in their homes and communities;
- feel supported when they need to; and
- have choice, independence and control.

Appendix 2

Health evidence base

Contents

1 Access to open space and nature

1.1.1 A comprehensive review of papers[1] examining the health effects of green space supported the view that open space and nature has health benefits. From this study it was established that physical health benefits are related to an increase in physical activity which is linked to those health effects mentioned in Section 2.

1.1.2 Open space and nature can also improve community resilience and cohesion, (Section 4) reduce greenhouse gases (Section 9), reduce health inequalities, enhance our living environment and improve mental health particularly for children[2].

1.1.3 A literature review of peer reviewed papers undertaken by the Forestry Commission[3] found evidence that proximity, size and amount of green space available to people in urban environments influenced physical and mental health outcomes. The review identified the key health benefits of green space as:

- *'Long and short term physical benefits associated with obesity, life expectancy, heart rate and blood pressure;*
- *attention and cognitive benefits associated with restoration, mood and self-esteem;*
- *physical activity benefits associated with the use of greenspace;*
- *self-reported benefits in terms of health and life satisfaction; and*
- *community cohesion benefits through social contact fostered by greenspace'.*

1.1.4 The review suggested various mechanisms for the beneficial effects of green space including *'providing a space that promotes social interaction and inclusion, reducing social annoyances and crime'* and *'reducing stress and restoring cognitive function and capacity to function with the demands of life'*.

1.1.5 A literature review by Greenspace Scotland[4] also found a positive relationship between green space and general health. Importantly this study also identified that 'the attractiveness or

1 Lee A.C.K and Maheswaran (2010) The health benefits of urban green spaces: a review of the evidence. Journal of Public Health 33

2 Faculty of Public Health in association with Natural England (2010) Great Outdoors: How our natural health service uses green space to improve wellbeing – An action report

3 O'Brien, L., Williams, K., Stewart, A.,(2010), Urban health and health inequalities and the role of urban forestry in Britain: A review, The Research Agency of the Forest Commission

4 Croucher, K., Myers, L., and Bretherton, J., (2007), The links between greenspace and health: a critical literature review, Greenspace Scotland

quality of greenspace is an important determination of green space use'.

1.1.6 The Greenspace Scotland review also identified links to mental health, stating that 'studies consistently show a relationship between levels of stress and access to urban green spaces' and identified 'activity and exercise, natural daylight, stimulation of the senses and aesthetic experience' as potential factors in reducing stress.

1.1.7 Research into the effects of the visual and aesthetic environment on wellbeing is mainly focused on the psychological effects of 'natural' versus 'man-made' or urban views. In general, evidence shows a preference for views of natural over man-made scenes. These links are often tied in with other, related issues such as opportunities for exercise and contact with nature.

1.1.8 Maller et al[5] identified the lack of opportunity to experience contact with nature, as a strong determinant of health and wellbeing. It has been concluded[6] that *'exposure to natural spaces – everything from green parks and open countryside to gardens and other greenspace – is good for health'*.

1.1.9 Open space and nature can improve physical health, comfort, and mental wellbeing, as well as provide opportunities to improve people's quality of life and social interactions[7]. Other benefits cited by Douglas[8] include alleviation of symptoms of anxiety and depression, and restored capacity for concentration and attention.

1.1.10 A review of empirical, theoretical and anecdotal evidence[5 7] has shown that contact with nature can also have positive effects on blood pressure, cholesterol and stress reduction, with particular relevance to mental health and cardiovascular disease.

Vulnerable Groups

1.1.11 Often the poorest people experience the poorest quality outdoor environments and suffer disproportionately from a lack of equitable access to ecology and green spaces. Recent Dutch research has suggested that there is a positive association between the percentage of green space in a person's

5 Maller,C., Townsend,M., Pryor,A., Brown,P., and St Leger,L. (2005). Healthy Nature Healthy People: 'Contact With Nature' as an Upstream Health Promotion Intervention for Populations. Health Promotion International, Vol 21 No.1. Oxford University Press.

6 Sustainable Development Commission (2008) Health, Place and Nature

7 Royal Commission on Environmental Pollution (2007). The Urban Environment (RCEP Twenty-Sixth Report). RCEP.

8 Douglas,I. (2005). Urban Greenspace and Mental Health. Prepared for the UK MAB Urban Forum.

residential area and their perceived general health and that this relationship is strongest for lower socio-economic groups[9]

9 Maas J et al (2006). Green space, urbanity and health: how strong is the relation? Journal of Epidemiology and Community Health, 60, 587-592.

2 Accessibility and active travel

Accessibility

2.1.1 A new pedestrian route such as the Garden Bridge can influence the number of destinations that can be reached within a given time-travel distance for the local population. Accessibility and the provision of public services such as health, education and community facilities have been found to have a direct positive effect on human health[10].

2.1.2 Recent research has stated that 5% of adults in Great Britain reported feeling a sense of isolation due to difficulties accessing local shops and services. Accessibility was also an issue for over a fifth of adults who reported that they knew someone who felt a sense of isolation due to difficulties accessing local shops and services.

2.1.3 As the WHO[11] explained access to local facilities such as shops, schools, health centres and places of informal recreation are also important for health and wellbeing due to the physical activity taken in getting there and the social interaction on the way there or at the facilities.

2.1.4 Accessibility for local residents to community facilities can play a significant role in promoting or discouraging physical activity. The key influential characteristics of an accessible community noted by Dannenberg et al[12] included proximity of recreation facilities, housing density, street design and accommodation for safe pedestrian, bicycle, and wheelchair use.

Active travel

2.1.5 Active travel applies to modes of transport that require physical activity, in contrast to modes that require little physical effort such as motor vehicles. Therefore it is the physical activity associated with active travel that brings about health effects.

2.1.6 Research suggests that most sustained exercise is taken during the course of everyday activities such as travelling to work or going to the shops, rather than specifically for health purposes[13].

10 HUDU (2013). HUDU Planning for Health. Rapid Health Impact Assessment Tool. (NHS) London Healthy Urban Development Unit

11 WHO (2012) Addressing the social determinants of health: the urban dimension and the role of local government

12 Dannenberg A.L, Jackson R.J, Frumkin H, Schieber R.A, Pratt M, Kochtitzky C and Tildon H. N (2003) The Impact of Community Design and Land-Use Choices on Public Health: A Scientific Research agenda. American Journal of Public Health 93

13 Caldwell, L.L. (2005), Leisure and health: Why is leisure therapeutic?

2.1.7 A systemic review[14] has shown that the environment has an effect on people's participation in physical activity which in turn affects their health. The evidence linked transport, the environment and physical activity and includes:

- access to physical activity facilities;
- distance to destinations;
- levels of residential density;
- type of land use;
- urban walkability scores;
- perceived safety;
- availability of exercise equipment; and
- the provision of footways.

2.1.8 Altering the environment, particularly an urban landscape may also lead to unintended changes in patterns of mobility, physical activity and therefore eventually population health[15]. Particularly the intervention of transport systems designed to promote active travel such as cycling and walking can reap health benefits by increasing physical activity, reducing morbidity from air pollution and reducing the risk of road traffic accidents by decreasing the number of journeys undertaken by motor vehicles[16].

2.1.9 A recent systemic review of the link between positive health benefits and physical activity has been undertaken by Saunders et al[17]. Although the study determined that there is no clear evidence in the effectiveness of active travel in reducing obesity, it noted that there has been a rise in the prevalence of obesity which has occurred in parallel with a decline in active travel in the past 30-40 years[18]. It was also suggested that active travel over longer periods and longer distances may also reduce the risk of diabetes.

2.1.10 The positive effects of physical activity on physical health was summarised in a recent Department of Health report[19] which suggests that *'Regular physical activity can reduce the risk of*

14 National Obesity Observatory (2011) Data sources: environmental influences on physical activity and diet

15 Ogilvile D, Mitchell R, Mutrie N, Petticrew M and Pratt S (2010) Shoe leather epidemiology: active travel and transport infrastructure in the urban landscape. International Journal of Behavioural Nutrition and Physical Activity 7.

16 Sustainable Development Commission (2008) Health, Place and Nature

17 Saunders LE, Green JM, Petticrew MP, Steinbach R, Roberts H (2013) What Are the Health Benefits of Active Travel? A Systematic Review of Trials and Cohort Studies. PLoS ONE 8(8)

18 Lubans D, Boreham C, Kelly P, Foster C (2011) The relationship between active travel to school and health-related fitness in children and adolescents: a systematic review. International Journal of Behavioral Nutrition and Physical Activity 8.

19 CMO (2011) Start Active, Stay Active: A report on physical activity from the four home countries' Chief Medical Officers, Department of Health, Physical Activity, Health Improvement and Protection

many chronic conditions including coronary heart disease, stroke, type 2 diabetes, cancer, obesity, mental health problems and musculoskeletal conditions. Even relatively small increases in physical activity are associated with some protection against chronic diseases and an improved quality of life.'

2.1.11 It has been shown that *'physical activity improves health throughout the life course – from childhood through to older age'*[20]. The health benefits of physical exercise occur across virtually the full range of diseases, and when this is combined with the prevalence of inactivity among the public, it *'makes physical activity one of the main contemporary public health issues'.*

2.1.12 Positive mental health effects associated with physical exercise have been highlighted in evidence reviews by Cave et al[21], Sport England[22] and AEA Technology[23]. Mental health effects cited include improvements in people with generalised anxiety disorders including phobias, panic attacks, and stress disorders.

Vulnerable Groups

2.1.13 Although all groups are shown to benefit from regular exercise, the benefits to children and the elderly are particularly emphasised. The importance of exercise for children is highlighted in terms of benefits in building up bone density, avoidance of weight gain, links to health status in later life, and in establishing habits, which may be more difficult to begin in later life (British Medical Association, 2002 and DH, 2004). The benefits for the elderly include retention of mobility, cognitive function and independence[24].

20 Harding, T., (1997), A Life Worth Living: the Independence and Inclusion of Older People, London: Help the Aged, cited in Beaumont, J., 2011, Measuring National Well-being, Discussion paper on domains and measures, Faculty of Public Health, Office for National Statistics

21 Cave. B, Curtis. S, Aviles. M, and Coutts. A, (2001). 'Health Impact Assessment for Regeneration Projects. Volume II Selected evidence base'. East London and City Health Action Zone.

22 Sport England. (2007). 'Active Design. Promoting opportunities for sport and physical activity through good design'. Supported by CABE, DH and DCMS. Sport England.

23 AEA Technology, (2000). 'Informing transport health impact assessment in London'. Commissioned by NHS Executive, London.

24 Department of Health, (2004). ' Choosing Health Summaries: Diet and Nutrition'. Public Health White Paper. Department of Health.

3 Crime reduction and community safety

3.1.1 Community safety is crucial in determining health and wellbeing. It has been stated[12] that *'a healthy community protects and improves the quality of life for its citizens, promotes healthy behaviours and minimizes hazards for its residents, and preserves the natural environment.'*

3.1.2 The effects of crime on health include both direct effects, for example through violence, and indirect social and psychological effects arising from fear of crime[25].

3.1.3 The same factors that affect local crime rates often seem to affect health[26]. A recent report on Measuring National Wellbeing[27] has also identified crime as a key indicator in determining wellbeing.

3.1.4 Hirschfield [28] showed that victimisation or fear of crime may manifest itself through symptoms such as stress, sleeping difficulties, loss of appetite, loss of confidence and health harming 'coping' mechanisms such as smoking and alcohol consumption. The research also suggested that community problems such as disorder and anti-social behaviour, which are not strictly criminal offences, can have adverse effects on health.

3.1.5 A recent review undertaken by Lorenc *et al*[29] looked at qualitative evidence on the fear of crime and the environment. The report notes that most research on crime and health focused on the direct health effects suffered by victims of crime. However, indirect effects of crime and its broader influence on individuals and communities may also have important effects on wellbeing.

3.1.6 Fear of crime has been shown in several studies to have a modest, but consistently significant, association with health and wellbeing. The report also noted that fear of crime was only weakly correlated with actual crime rates, and highlighted other community safety issues such as urban neglect and social cohesion as factors affecting fear of crime.

25 British Medical Association (1999). 'Health and Environmental Impact Assessment: an Integrated Approach'. Earthscan Publications Ltd.

26 Greater London Authority (2005) 'Review of the London Health Strategy High Level Indicators'. London Health Commission.

27 Randall, C. (2012), Measuring National Well-being, Where we Live , Office for National Statistics

28 Hirschfield.A, (2003). 'The Health Impact Assessment of Crime Prevention'. Sourced from NHS National Institute for Health and Clinical Evidence.

29 Lorenc, T., Petticrew, M., Whitehead, M., Neary, D., Clayton, S., Wright, K., Thomson, H., Cummins, S., Sowden, A., Renton, (2012). A. Fear of crime and the environment: systematic review of UK qualitative evidence, BMC Public Health. 13: 496.

3.1.7 The study by Lorenc *et al* examines the consequences of fear of crime, stating that 'relatively few participants see fear as having serious mental health effects, although several report some degree of psychological stress as a result of fear. A much more widely perceived consequence of fear is to limit people's activities, including social and cultural activities, sometimes leading to social isolation. Participants from across the population report such limitations, but they appear to be more serious for women, older people and people with disabilities. Parents also report placing serious restrictions on children's activities.'

3.1.8 The design of the built environment can influence levels of crime and perceptions of community safety with interventions such as street lighting helping to reduce crime, and design that promotes 'eyes on the street' helping to reduce anti-social behaviour.

Vulnerable groups

3.1.9 Social inequalities are particularly marked in urban environments, with different population subgroups experiencing impacts to different degrees. Older people are identified as being particularly likely to suffer as a result of fear of crime.

4 Social cohesion and lifetime neighbourhoods

Social cohesion

4.1.1 Social cohesion is defined as the quality of social relationships and existence of trust, mutual obligations and respect in communities or the wider society[30]. This is closely related to levels of inequality or exclusion within a given community.

4.1.2 Social cohesion has been linked to volunteering, the empowerment of individuals and ethnic diversity which drive social cohesion but on the contrary inequalities within a population and crime and safety can erode social cohesion within a community[31].

4.1.3 It is also closely linked to social capital which the World Bank has defined as '*…the institutions, relationships and norms that shape the quality and quantity of a society's social interactions... Social capital is not just the sum of the institutions which underpin a society – it is the glue that holds them together*'[32].

4.1.4 The physical environment can directly influence social capital and social cohesion, as social networks rely on high quality, accessible spaces where people can meet to pursue their enthusiasms and form relationships.

4.1.5 Social cohesion is also linked to transport infrastructure which enables residents to both integrate within and move outside of their own community.

4.1.6 Social cohesion and social capital have been shown to positively correlate with a reduced fear of social isolation and positive mental health[45].

4.1.7 Opportunities for communities to participate in the planning of healthcare services and social infrastructure can impact positively on mental health and wellbeing and improve community cohesion10.

4.1.8 According to a literature review by Cave et al. [33] social capital may:

- protect health by buffering against the effects of life events which may be damaging to health;

30 WHO (2003) Social determinants of health: the solid facts 2nd edition.

31 Department for Communities and Local Government (2008) Predictors of community cohesion: multi-level modelling of the 2005 Citizenship Survey

32 The World Bank, (1999), What is Social Capital?, PovertyNet

33 Cave, B., Curtis, S., Aviles, M. and Coutts, A.,(2001), Health Impact Assessment for Regeneration Projects. Volume II Selected evidence base, East London and City Health Action Zone, University of London

- have physiological effects, through the hormonal system, on the body's response to stress and functioning of the immune system;
- reduce isolation, which is associated with disease, accidents and suicide;
- enable people to cope with illness better and have better prognoses when ill; and
- reduce or protect against mental health problems, such as anxiety and depression.

Lifetime neighbourhoods

4.1.9 The Communities and Local Government (CLG) document 'Towards Lifetime Neighbourhoods: Designing sustainable communities for all[34]' describes lifetime neighbourhoods as being 'sustainable communities that offer a good quality of life to all generations'.

4.1.10 They should aim to be:

- Accessible and inclusive
- Aesthetically pleasing and safe (in terms of both traffic and crime), and easy
- and pleasant to access; and
- A community that offers plenty of services, facilities and open space.

4.1.11 Furthermore, we can add that lifetime neighbourhoods are likely to foster:

- a strong social and civic fabric, including volunteering, informal networks;
- a culture of consultation and user empowerment amongst decision-makers; and
- a strong local identity and sense of place.

4.1.12 The potential health effects of the aspects outlined above, that contribute to the concept of a lifetime neighbourhood, are all further explored within the other determinant sections that make up this literature review.

Vulnerable groups

4.1.13 Some population groups are believed to be at particular risk of social exclusion, including black and minority ethnic (BME) groups, disabled people, lone parents, older people, carers,

34 Ed Harding, International Longevity Centre UK (2007) 'Towards Lifetime Neighbourhoods: Designing sustainable communities for all'. Department for Communities and Local Government.

asylum seekers and refugees and ex-offenders (Wanless 2003[35]).

35 Wanless.D, (2003). 'Securing good health for the whole population'. Population Health Trends. HM Treasury/Department of Health.

5 Air quality, noise and neighbourhood amenity

Air quality

Road traffic emissions

5.1.1 Evidence on the links between road traffic emissions and health is well established, based on numerous research studies. A WHO report in 2000 suggested that about 36,000–129,000 adult deaths a year are brought forward due to long-term exposure to air pollution generated by traffic in European cities. The main health damaging pollutants released as emissions from road traffic are Particulate Matter (PM_{10}[36]) and nitrogen dioxide (NO_2).

5.1.2 PM10, which is an important pollutant with regard to health effects, comprises atmospheric particles that are less than 10µm in diameter. Road transport is a major source of PM_{10}, which is emitted from the combustion of vehicle fuels. An important property is the extent to which these particles may be deposited within the lungs and this is dependent on size of particles (smaller particles have a greater chance of reaching the deeper parts of the lungs). There is growing evidence that smaller respirable particulate matter may be more relevant to health than larger particles. Recent studies[37] have found that ultra-fine particles (less than 0.1 µm) have been associated with stronger effects on the lung function and symptoms in asthmatics than either PM_{10} or $PM_{2.5}$.

5.1.3 Studies have also suggested that particulate pollution of various sizes may exacerbate pre-existing asthma[38].

5.1.4 It should be noted that exposure in an urban setting is complex and cumulative and interactive effects need to be considered[47]. Furthermore increasing temperatures related to climate change have also been shown to augment the negative health impact of particulate matter, resulting in increased mortality[39].

5.1.5 The effects of road traffic related NO_2 on health are less well understood than the effects of PM_{10}. Numerous epidemiological studies have identified associations between NO_2

36 Particulate Matter up to 10 micrometers in size

37 World Health Organization. (2000) Transport, environment and health. WHO Regional Publications, European Series. No.89

38 DoH Committee of the Medical Effects of Air Pollutants, (1998), Quantification of the Effects of Air Pollution on Health in the United Kingdom

39 Meng, X., Zhang, Y., Zhao, Z., Duan, X., Xu, X. and Kan, H., (2012), 'Temperature modifies the acute effect of particulate air pollution on mortality in eight Chinese cities', Science of The Total Environment 435– 436, 215–221.

concentrations and respiratory health[40], but it may be that in these studies NO_2 is a key marker for traffic-related pollution more generally.

5.1.6 Quantifying short and long term impacts of NO_2 pollution has been problematic due to uncertainties in the concentration-response functions available. It has been estimated that the direct effect of NO_2 on the health of the UK's population could be that between 600 and 6,000 deaths per year may have been brought forward by a matter of days or weeks as a result of exposure to NO_2 in the ambient air. Likewise it has been estimated that between 1,400 and 14,000 hospital admissions and between 200,000 and 2 million GP consultations for respiratory illnesses may arise as a result of exposure to the ambient NO_2 in the UK each year. Ambient NO_2 is said to contribute to an average of 1-7 extra days of symptoms in asthmatics annually[41].

Vulnerable groups

5.1.7 Defra commissioned a study in 2006 to review recent research evidence on links between air quality and social deprivation in the UK[42]. The analysis for England showed that there is a tendency for higher relative mean annual concentrations of nitrogen dioxide (NO_2) and particulate matter (PM_{10}) in the most deprived areas of the country. This distribution can largely be explained by the high urban concentrations driven by road transport sources, and the higher proportion of deprived communities in urban areas. If exceedences of National Air Quality Standards are considered, the correlation between poor air quality and deprivation is stronger, showing that when the most polluted areas are considered, the greatest burden is on the most deprived communities, and very little on the least deprived.

5.1.8 The review also identifies age as a key indicator of susceptibility to air pollution: 'children and elderly groups [are] deemed more susceptible to certain health impacts'.

Noise

5.1.9 Sound is produced by mechanical disturbance propagated as a wave motion in air or other media and noise is therefore unwanted sound. According to the WHO, *'In some situations, but not always, noise may adversely affect the health and well-*

40 Health Scotland, MRC Social and Public Health Sciences Unit and Institute of Occupational Medicine (2007). Health Impact Assessment of Transport Initiatives: A Guide. NHS Health Scotland

41 Searl A. (2004). A review of the acute and long term impacts of exposure to nitrogen dioxide in the United Kingdom. Institute of Occupational Medicine

42 Defra, Netcen, Department for Communities and Local Government, National Statistics. Air Quality and Social Deprivation in the UK: an environmental inequalities analysis - Final Report to Department of Environment, Food and Rural Affairs AEAT/ENV/R/2170, June 2006

being of individuals or populations"[43]. More recently, the WHO has stated that *'Environmental noise is a threat to public health, having negative impacts on human health and well-being''*[44].

5.1.10 Hearing loss does not occur from typical exposure to environmental noise; it is more commonly associated with occupational exposure to much higher noise levels. In the everyday environment, the response of an individual to noise is more likely to be behavioural or psychological (i.e. non-auditory) than physiological. There are a wide range of non-auditory health effects that may be associated with exposure to environmental noise, although the pathways, strength of association, and possible causal mechanisms for these are not fully understood. The WHO[45] recognises the health linkages between environmental noise and disease including cardiovascular disease (mean blood pressure, hypertension, and ischaemic heart disease), sleep disturbance, tinnitus and annoyance. Other Effects on mental wellbeing include psychosocial effects, mental morbidity, impaired memory, impaired performance[46] communication and learning effects and impaired social behaviour [47]

Neighbourhood amenity

5.1.11 There is no established evidence linking airborne dust such as that from construction sites with adverse health effects. Dust can cause eye, nose and throat irritation and lead to deposition on cars, windows and property[48] therefore impacting on the neighbourhood amenity.

5.1.12 Noise has been noted to impact on amenity for a local community by causing annoyance. As a result people may experience anger, disappointment, dissatisfaction, anxiety and stress amongst other symptoms[47].

5.1.13 Notley et al[49] reports the preliminary results emerging from the UK National Noise Attitude Survey undertaken during 2012 which indicate that around 30% of those who hear road traffic noise report being moderately, very or extremely bothered, annoyed or disturbed

43 World Health Organisation (1995). Community Noise. Edited by B. Berglund and T. Lindvall

44 World Health Organisation (2009). Night Noise guidelines for Europe

45 World Health Organisation (2011). Burden of disease from environmental noise, Quantification of health life years lost in Europe. World Health Organisation and JRC European Commission

46 Evans.G.W. and Lepore.S.J (1993). Non-auditory Effects on Children: A Critical Review. Children's Environments 10(1), 1993.

47 EAA and JRCC (2013) Environment and human health. Report No 5/2013.

48 GLA (2006). The control of dust and emissions from construction and demolition Best Practice Guidance, Greater London Authority.

49 H. Notley, C. Grimwood, G. Raw, C. Clark, R. Van de Kerckhove and G. Zepidou (2013), The UK national noise attitude survey 2012 - the sample, analysis and some results. Proc. Internoise 2013.

5.1.14 Furthermore families with lower income tend to have lower mobility but greater exposure to the adverse environmental conditions related to transport such as air and noise pollution and road traffic[50].

50 WHO (2012) Addressing the social determinants of health: the urban dimension and the role of local government

6 Access to healthy food

6.1.1 Access to healthy food and a nutritious diet can prevent health effects and chronic diseases related to obesity. Poor diet and nutrition, together with smoking and alcohol accounted for many coronary heart disease and cancer deaths[51].

6.1.2 A report by the Department of Health in 2011[52] noted England as one of the world's leaders in obesity and excess weight which can increase health risks such as breathing problems, back pain, infertility, angina, gall bladder disease, liver disease, ovarian cancer, osteoarthritis and stroke.

6.1.3 Furthermore the report detailed the most prevalent health risks for an obese man can include:

- five times more likely to develop type 2 diabetes;
- three times more likely to develop cancer of the colon; and
- more than two and a half times more likely to develop high blood pressure – a major risk factor for stroke and heart disease.

6.1.4 An obese woman, compared with a healthy weight woman, is:

- almost thirteen times more likely to develop type 2 diabetes;
- more than four times more likely to develop high blood pressure; and
- more than three times more likely to have a heart attack.

6.1.5 As the California Center for Public Health Advocacy outlined[53] the availability of healthy eating food outlets which sell high quality, nutritious food at affordable prices is an important factor influencing food choices. It can encourage a healthier diet and thus lower the health risks associated with higher calorific and sugar intake and lower consumption of fruit and vegetables. Higher numbers of fast food outlets and convenience stores (as opposed to grocery stores or produce vendors) increased the likelihood of diabetes and obesity for individuals.

6.1.6 Allotment gardening is an example of access to healthy food and HUDU have outlined[54] that it can have a positive effect on both physical and mental wellbeing by providing opportunities for horticultural therapy to people with physical and mental health problems.

51 Department of Health, (2004). ' Choosing Health Summaries: Diet and Nutrition'. Public Health White Paper. Department of Health.

52 Department of Health (2011) Healthy Lives, Healthy People: A call to action on obesity in England.

53 California Center for Public Health Advocacy (2008) Designed for Disease: The link between local food environments and obesity and diabetes

54 NHS London Healthy Urban Development Unit (2007) Delivering Healthier Communities in London

Vulnerable groups

6.1.7 It has been noted that people on low incomes suffer more disproportionately from diet-related diseases. Difficulties are wider than a lack of money, relating to worse access to transport and to shops that sell good quality affordable food, particularly fruit and vegetables.

7 Access to work and training

Access to work

7.1.1 The Marmot Review (2010)[55], which was commissioned by the Department of Health to look into health inequalities in England, looks at the differences in health and wellbeing between social groups. The report identified six policy objectives for reducing health inequalities, one of which was to *'Create fair employment and good work for all'*. The Review identified the importance of work for health*: 'being in good employment is protective of health. Conversely, unemployment contributes to poor health.'*

7.1.2 Many of the documented linkages between access to work and health are often related to the negative impacts of unemployment, rather than the positive impacts of employment. However, it should follow that maintaining high levels of employment opportunities could be expected to be positive in health terms.

7.1.3 Employment is related to social and psychological wellbeing; a study commissioned by the Department of Work and Pensions[56] found that 'work meets important psychosocial needs in societies where employment is the norm' and that 'work is central to individual identity, social roles and social status'.

Access to training

7.1.4 Training is a form of work involving the application of physical or mental effort to improve skills, knowledge or other personal resources which can improve chances of employment and career progression.

7.1.5 The Marmot review[55] highlighted the links between inequalities in educational outcomes and physical and mental health, and identified *'Reducing the social gradient in skills and qualifications'* as a priority objective to reduce health inequalities. The review made policy recommendations including increasing lifelong learning opportunities, including work-based learning, to improve health outcomes.

7.1.6 Young adults who undertake training have been shown to have improved somatic and psychological symptoms compared with those who are unemployed. It was noted as particularly important for mental health, general wellbeing and for the longer-term social development of school leavers[57].

55 Marmot, M., Allen, J., Goldblatt, P., Boyce, T., McNeish D., Grady, M. and Geddes, I., (2010), Fair society, healthy lives: Strategic review of health inequalities in England post-2010, The Marmot Review

56 Waddell, G., Burton, A. K.,(2007), Is work good for your health and well-being?, The Stationery Office

57 Waddell G and Buton A. K (2006) Is work good for your health and well-being? The Stationary Office.

8 Minimising the use of resources

8.1.1 Reducing or minimising waste including disposal processes for construction as well as encouraging recycling at all levels can improve human health directly and indirectly by minimising environmental impact, such as air pollution[58].

8.1.2 Sending out waste from a development site to be sorted or disposed can increase vehicle movements, emissions and cause significant disruption including noise and dust which can contribute towards health problems for residents. See section 5 for further details on the linkages to potential health effects from both air quality and dust, and noise impacts.

58 HUDU (2013). HUDU Planning for Health. Rapid Health Impact Assessment Tool. (NHS) London Healthy Urban Development Unit.

9 Climate change

9.1.1 Climate change is the projected rise in global temperatures as a result of anthropogenic development which is likely to contribute to continued changes in weather patterns, rising sea levels and increased frequency and intensity of extreme weather events.

9.1.2 The most recent UK Climate Projections (UKC09) have stated that the UK should expect a shift generally towards wetter winters and a greater proportion of precipitation to fall as heavy events. There is a predicted rise in temperature and greater likelihood of drier summers has been suggested, but the various projections cover a wide range of outcomes from climate change.

9.1.3 There are direct impacts linking the environment and health such as heat-related effects, flooding and poor air quality and indirect impacts such as fuel poverty, access to green space and disruption to services and access such as healthy food.

9.1.4 Many of the health impacts are therefore interrelated with the health determinants and associated health impacts previously mentioned.

Vulnerable groups

9.1.5 Chalmers et al[59] concluded that certain people are expected to be the most vulnerable to climate change and this includes:

- poorly housed or non-mobile individuals;
- the population living in high risk places such as flood zones and coastal locations; and
- socially isolated or those individuals otherwise unable to adapt to change.

Heat-related effects

9.1.6 Increasing temperatures would increase heat-related mortality which currently accounts for 1,100 premature deaths in the UK, with London being the area most affected[60]. This could further increase in the future in London, primarily as a result of the urban heat island effect.

9.1.7 There are also particularly vulnerable groups who are at a greater risk of serious harm from heat extremes including babies, young children, the elderly, people taking diuretic drugs

59 Chalmers H, Pilling A and Maiden T (2008) Adapting to the Differential Social Impacts of Climate Change in the UK

60 London Climate Change Partnership (2012) Linking environment and health: A resource for policy and decision makers working on Joint Strategic Needs Assessment.

and those suffering from dementia, respiratory ailments, neurological conditions or diabetes[61].

Allergens, infectious disease and vectors for disease

9.1.8 Climate change can influence allergens, particularly allergenic plants by changing flowering times and distribution leading to negative impact for allergic people by lengthening the allergy season[62].

9.1.9 The Inter-governmental Panel on Climate Change (IPCC)[63] also reported that the distribution and range of some infectious disease vectors along with the seasonal distribution of some allergenic pollen species has the potential to negatively impact on health.

Increased precipitation, rising sea levels and flooding

9.1.10 The Health Protection Agency[62] outlined the direct and indirect health effects of flooding. Direct effects include physical trauma, injuries and drowning. Indirect effects include damage from infrastructure, water supplies, displacement and disruption to people's lives.

9.1.11 Flooding also has negative effects on mental health and wellbeing by increasing cases of anxiety, depression and sleeplessness after a flooding event[64].

9.1.12 Rising sea levels and increased sea temperatures associated with climate change may also increase marine pathogens and harmful algal blooms which are harmful to human health[61].

9.1.13 Increased precipitation, rising sea levels and flooding can also increase the risk of contamination to water supplies[62] however this is usually low risk in the UK.

61 Defra (2012)UK Climate Change Risk Assessment: Health Sector Report

62 Health Protection Agency (2012) Health Effects of Climate Change in the UK 2012

63 IPCC (2007) IPCC Fourth Assessment Report : Climate Change 2007 (AR4) - Working Group II Report 'Impacts, Adaptation and Vulnerability'.

64 Ahern M, Kovats R.S, Wilkinson P, Few R and Matthies F (2005) Global Health Impacts of Floods: Epidemiologic Evidence. Epidemiologic Reviews 27.

Appendix 3

HIA Scoping Report

Transport for London

Garden Bridge

Health Impact Assessment Scoping Report

Issue | 21 November 2013

Job number 230838-30

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Glossary of terms and abbreviations

AOD	Above Ordnance Datum
CoL	City of London
CoW	City of Westminster
DCLG	Department for Communities and Local Government
DH	Department of Health
EIA	Environmental Impact Assessment
EqIA	Equalities Impact Assessment
ES	Environmental Statement
HDA	Health Development Agency
HIA	Health Impact Assessment
HUDU	Healthy Urban Development Unit
LBC	London Borough of Camden
LBL	London Borough of Lambeth
LBS	London Borough of Southwark
LSOA	Lower Super Output Areas are built from groups of Census output areas, are of a consistent size and are not subject to boundary changes between censuses. In 2011 they were designed to have a population of between 1,000 and 3,000. The average population of LSOAs in England and Wales in 2011 was 1,600. There are 34,753 LSOAs in England and Wales. Super Output Areas are specifically designed for statistical purposes. In particular, they are used by both central government departments and local authorities for a range of purposes including planning and monitoring of services
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NPPF	National Planning Policy Framework
TfL	Transport for London
WCC	Westminster City Council
WHO	World Health Organisation

1 Introduction

1.1.1 Transport for London (TfL) is proposing to submit a planning application to Westminster City Council (WCC) and Lambeth Council for development of a new footbridge over the River Thames. A Garden Bridge Trust has been set up to raise the funding necessary to build and maintain the bridge in future.

1.1.2 The proposed development is known as the Garden Bridge. The bridge would be for pedestrians only, there would be no commercial premises on the bridge and it would feature a significant amount of planting.

1.1.3 The aim of the Health Impact Assessment (HIA) would be to ensure that the Garden Bridge fulfils its potential as an exemplary initiative to improve physical and mental health and wellbeing.

1.1.4 This HIA Scoping Report sets out the proposed scope of the HIA to be submitted with the planning application.

1.1.5 This scoping report outlines the proposed approach to the HIA, including:

- Project description;
- Background to HIA;
- HIA methodology and scope; and
- Identification of health determinants to be included in the HIA.

2 Project description

2.1 Site location

2.1.1 The Garden Bridge would be located in Central London between Waterloo Bridge and Blackfriars Bridge and would span the River Thames between Temple London Underground (LU) Station at Victoria Embankment and the South Bank.

2.1.2 The site occupies an area of 5.5 hectares (ha). The footprint of the Garden Bridge once built and operational would be significantly less than the site area required during construction.

2.1.3 This is located within the City of Westminster on the north bank and the London Borough of Lambeth (LBL) on the south bank as shown in Figure 1.

2.1.4 The site also lies in close proximity to three additional local authorities:

- The City of London (CoL) is approximately 150m to the east on the north side of the River Thames;

- The London Borough of Southwark (LBS) is approximately 200m to the east, on the south side of the River Thames; and
- The London Borough of Camden (LBC) lies approximately 600m to the north.

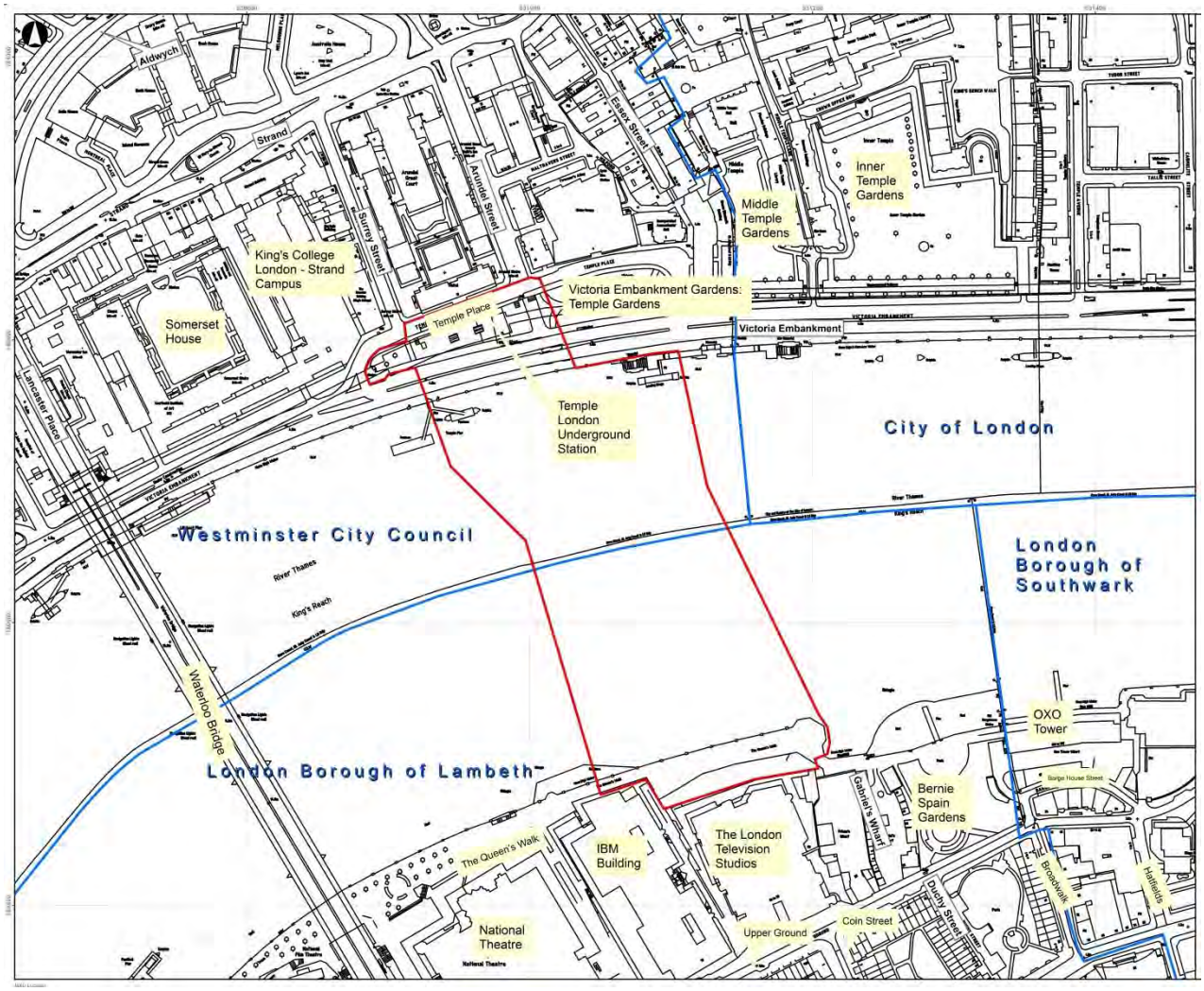

Figure 1: **Scoping boundary for Garden Bridge**

2.2 The Garden Bridge

Project background

2.2.1 The designer Thomas Heatherwick, supported by the actress Joanna Lumley, has proposed this new footbridge. The bridge is being engineered by Arup and would be highly sculptural with two supporting piers in the River Thames. The concept is to create a garden on the bridge, which would include significant planting themed from British indigenous species. The landscape design would be undertaken by Dan Pearson Studio and Arup. The bridge would be a place to dwell and enjoy the environment and views across London from a new vantage point as well as providing a fully accessible pedestrian crossing.

2.2.2 The aim of the Garden Bridge is to:

- improve London's cross-river pedestrian network;
- increase footfall on the north bank; and
- provide valuable and creative public realm.

2.2.3 A plan showing the Garden Bridge is shown in Figure 2.1.

Figure 2.1: Illustrative overhead view of the Garden Bridge

The proposed development

2.2.4 The Garden Bridge is aligned to strike an exact central relationship with Arundel Street to the north, extending 360m in length directly across the River Thames to the South Bank providing a pedestrian link between Temple LU Station and the South Bank.

2.2.5 The bridge would rise steadily from the north and south banks to meet at the highest point between the two piers at 16.7mAOD.

2.2.6 The deck of the bridge would have a varying width, approximately 6m at its narrowest at the mid-river point, increasing to 33m over each pier. The bridge, in plan form, is formed from a series of radiating wedge segments which extend from the two piers in the River Thames.

Figure 2.2: Illustration of the Garden Bridge piers and planting looking north-easterly from South Bank

Figure 2.3: Illustration of Garden Bridge pier and underside of the bridge looking south-easterly from the northern edge of the River Thames

2.2.7 The garden elements would comprise planting and 4m wide walkways. With careful, well designed and managed planting a range of individual but connected phases of planting would be created along the length of the Garden Bridge.

2.2.8 The phases of planting would align with the form and width of the bridge, and the depth of soil to create a transitional experience through a series of habitat and landscape characters.

Figure 2.4: Illustration of one of the walkway routes and planting on the Garden Bridge

2.2.9 Lighting would be used to create a safe and attractive pedestrian environment across the Garden Bridge while avoiding adverse effects on ecological resources.

Figure 2.5: Illustration of night-time view of Garden Bridge (including potential lighting) from Waterloo Bridge looking eastwards towards St Paul's Cathedral and the City of London

2.2.10 It is proposed that access to the Garden Bridge to the north of the River Thames would be via a connection to the roof of the existing Temple LU Station. Two lifts and step access would connect the Garden Bridge to the roof of Temple LU Station that would in turn provide further step access and a ramp to street level at Temple Place.

2.2.11 To the south of the River Thames, it is proposed that access to the Garden Bridge would be provided by stairs and two lifts from the Queen's Walk.

2.2.12 A landscape strategy is being developed to ensure that the planting is sustainably managed to a high standard and that tree growth does not obscure key views over time.

3 Background to health impact assessment

3.1 What is health impact assessment?

3.1.1 Consideration of health is an important aspect of any major policy programme or project within the UK. The purpose of an HIA is to assess the health consequences of a policy, programme or project and to use this information in the decision-making process to maximise the positive and minimise the negative health impacts of a proposal.

3.1.2 HIA is a multi-disciplinary activity that cuts across the traditional boundaries of health, public health, social sciences and environmental sciences.

3.1.3 The most commonly used definition of HIA is taken from the World Health Organisation (WHO) Gothenburg Consensus Paper:

'……a combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population'[1]*.*

3.2 National and regional policy context

3.2.1 HIA is promoted at European level in Article 152 of the Amsterdam Treaty; and at UK level in the Government White Paper Saving Lives: Our Healthier Nation (1999).

3.2.2 The Government White Paper: Choosing Health – Making Healthy Choices Easier (2004) outlined the importance of routinely considering the impact of 'non-health' interventions on population health both before implementing policies (through HIAs, for example) and afterwards through evaluation.

3.2.3 The Government White Paper: Healthy Lives, Healthy People: Our strategy for public health in England (2010) does not identify a specific requirement for HIA, but its policies and guidance support this approach.

3.2.4 The National Planning Policy Framework (NPPF, 2012), makes reference to the links between local planning authorities and health organisations. The national policy suggests future

[1] WHO European Centre for Health Policy. (1999). Health impact assessment: main concepts and suggested approach. Gothenburg consensus paper. WHO Regional Office for Europe.

development should be assessed for any expected changes and barriers to health and well-being.

3.2.5 HIAs proactively seek to do just that, and therefore this policy can be noted in influencing the requirement to produce an HIA for new developments. The specific statement within the NPPF is within paragraph 171, addressing health and well-being, which is cited below:

'Local planning authorities should work with public health leads and health organisations to understand and take account of the health status and needs of the local population (such as for sports, recreation and places of worship), including expected future changes, and any information about relevant barriers to improving health and well-being.'

3.2.6 At regional level, the London Plan (GLA,2011), Policy 3.2C Improving Health and Addressing Health Inequalities states that:

"The impacts of major development proposals on the health and wellbeing of communities should be considered through the use of Health Impact Assessment (HIA)."

3.3 Definitions and determinants of health

3.3.1 Many groups concerned with health, including the WHO, advocate a wider, social understanding of health. The broader understanding of health is captured in the WHO definition:

'Health is a state of complete physical, mental and social well-being and not merely an absence of disease or infirmity[2]'.

3.3.2 The social model of health[3] considers the range of environmental, social, economic and fixed factors (or determinants) that influence health and wellbeing. The key determinants of health can be categorised as follows:

- Pre-determined factors such as age, genetic make-up and gender are fixed and strongly influence a person's health status.
- Social and economic circumstances such as poverty, unemployment and other forms of social exclusion strongly influence health, and improving them can significantly improve health.
- How the environment in which people live, work and play is managed – its air quality, built environment, water quality – can damage health, or provide opportunities for health improvement.

[2] World Health Organisation (WHO), (2007). Constitution of the World Health Organization, Geneva, 1946.
[3] Dahlgren and Whitehead (1991)

- Lifestyle factors such as physical activity, smoking, diet, alcohol consumption and sexual behaviour, can have significant impacts on health.
- Accessibility of services such as the National Health Service (NHS), education, social services, transport (especially public transport) and leisure facilities influence the health of the population.

3.3.3 Of these, only the pre-determined factors are unlikely to be influenced by a development proposal. The HIA will therefore consider all relevant health determinants other than pre-determined factors.

3.4 Guidance documents

3.4.1 The Garden Bridge HIA will be steered by the Planning for Health 'Rapid Health Impact Assessment Matrix' and guidance produced by the NHS London Healthy Urban Development Unit (HUDU, 2013).

3.4.2 The aim of the matrix is to ensure that:

'*health is properly considered when evaluating and determining planning proposals and that where possible development plans and proposals have a positive rather than a negative influence on health*'[4].

4 Proposed HIA methodology and scope

4.1 Geographical and temporal scope

Geographical scope

4.1.1 The geographical scope will vary between the different health determinants assessed in the HIA. The HIA as a whole will encompass the following geographical areas:

- Regional level: London.
- Local level: Borough level – CoW, LBL, LBS, CoL and LBC.
- Neighbourhood level: LSOA[5] groupings.

4.1.2 In order to examine baseline data relevant to the development, the geography examined at the local level would comprise the five boroughs and at the neighbourhood area would comprise a

[4] NHS London Healthy Urban Development Unit (HUDU), (2013). Planning for Health 'Rapid Health Impact Assessment Matrix'.

[5] LSOAs are built from groups of Census output areas, are of a consistent size and are not subject to boundary changes between censuses. In 2011 they were designed to have a population of between 1,000 and 3,000. The average population of LSOAs in England and Wales in 2011 was 1,600. There are 34,753 LSOAs in England and Wales.

group of LSOAs as set out in Figure 4.1 and Figure 4.2 below. These geographies are consistent with both the Equalities Impact Assessment (EqIA) and socio-economic assessment of the Environmental Impact Assessment (EIA) conducted for the Garden Bridge.

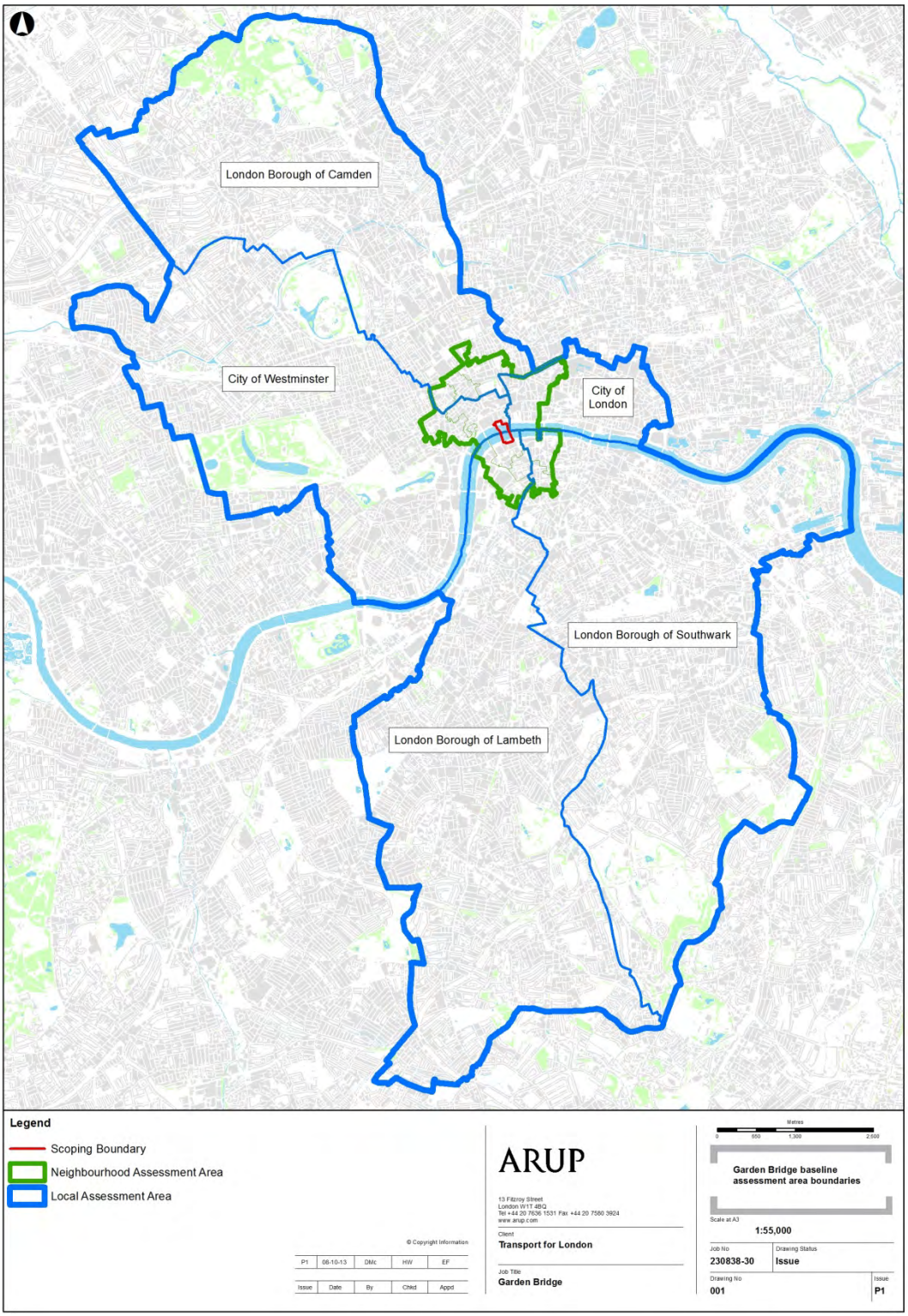

Figure 4.1: The local level assessment area (Borough) for baseline information

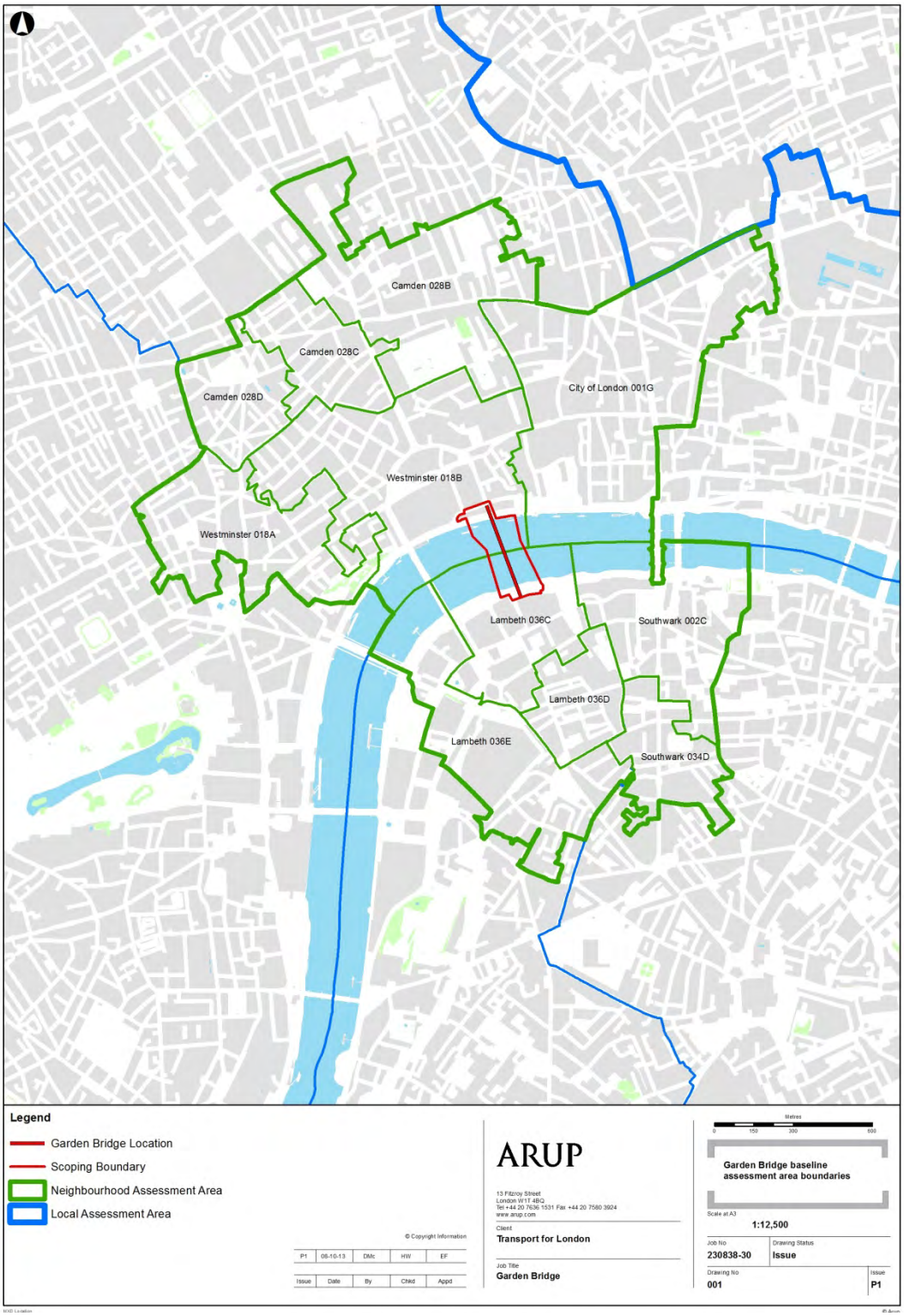

Figure 4.2: The neighbourhood level assessment area (LSOA) for baseline information

Temporal scope

4.1.3 The HIA's temporal scope will be consistent with other relevant assessments such as the EIA, EqIA and Sustainability Statement.

4.1.4 The scope will cover both the construction and the operation of the Garden Bridge and the likely duration of the impacts will be identified within the assessment.

4.2 Methodology

Policy review

4.2.1 National, regional and local policies, plans and strategies relevant to health, including NICE public health guidance, will be reviewed to provide a rationale for the HIA. The policy review for the HIA will include local policies relevant to health such as:

- Health and wellbeing strategies
- Sustainable community strategies.

4.2.2 The aim will be to identify local health policy and review how the Garden Bridge may impact on these, both positively and/or negatively.

Baseline data gathering

4.2.3 Baseline data will be collated from a range of sources to provide an overview of the existing population, existing health profile, socio-economic conditions in the local community and the physical environment in the locale.

4.2.4 This gathering of baseline data will be coordinated with other workstreams and deliverables for the planning application such as the Environmental Statement (ES), the EqIA and the Sustainability Statement.

4.2.5 The data reviewed will include, but is not limited to:

- Public Health England 'Health Profiles' 2013;
- The Department of Communities and Local Government (DCLG) 'The English Indices of Deprivation' 2010; and
- Office for National Statistics, Census 2011 data.

Identifying health determinants

4.2.6 A scoping workshop was undertaken with the TfL HIA lead and two public health professionals from TfL and the GLA, to establish an appropriate short-list of health determinants for the HIA. The scoping workshop was structured around the HUDU matrix and the resulting list of determinants for further assessment was based on an understanding of the characteristics of the proposed development and the local area.

4.2.7 The HUDU Rapid HIA Matrix identifies the following potential health determinants that may be relevant to a given project:

- housing quality and design
- access to healthcare services and other social infrastructure
- access to open space and nature
- air quality, noise and neighbourhood amenity
- accessibility and active travel
- crime reduction and community safety
- access to healthy food
- access to work and training
- social cohesion and lifetime neighbourhoods
- minimising the use of resources
- climate change

4.2.8 A review of the Garden Bridge was conducted against the assessment criteria outlined under each determinant in the matrix. It established which issues have the potential to impact on health and wellbeing, and therefore which determinants would be examined in further detail in the assessment and which could be excluded. The initial outcomes are presented in Section 5.

Linking health determinants and health impacts

4.2.9 Using available literature, including previous health studies and recent research, an evidence base will be collated to identify links between the selected determinants and health impacts.

4.2.10 Impacts may be direct or indirect and links may be causal or compounding. Key reference material is likely to include:

- Government health policies, programmes and strategies;
- Previous HIAs for transport projects;
- Public health reports and research papers from a range of sources, including:
    - Department of Health (DH);
    - WHO;
    - National Institute for Health and Care Excellence (NICE);
    - Health Development Agency (HDA).

Assessment of health impacts

4.2.11 The assessment of potential health impacts will be based on the health determinants outlined in the HUDU Matrix and will encompass, in general, only qualitative assessment techniques.

4.2.12 The qualitative assessment of health impacts will describe the nature of the potential impact on the determinant of health and the direction of change which will be classified as positive, negative, neutral or uncertain. Potential changes in health based statistics will not generally be quantified, since these have a wide and complex range of contributory factors, many of which are not related to the Garden Bridge.

4.2.13 The assessment will also consider the cumulative effects of changes in a number of determinants on a given receptor (i.e. cumulative impacts from changes in the air quality, noise and visual environment on a residential receptor).

4.2.14 Based on the literature review links will be made between the identified impacts on the selected determinants and potential health effects/outcomes.

4.2.15 Health inequalities and the potential for disproportionate impacts on certain vulnerable groups will be taken into account in the assessment.

4.2.16 The only exception to the qualitative assessment would be that the HEAT tool[6] (Health economic assessment tool), created by WHO, will be used to conduct an economic assessment of the health benefits of the Garden Bridge by estimating the value of reduced mortality that results from specified amounts of walking.

Recommendations

4.2.17 Where impacts are identified in the HIA, recommendations will be proposed to reduce any negative impacts and maximise any positive impacts on health from the proposed development. These recommendations will be fed into the design process through design workshops and on-going discussions and meetings with the design team to ensure that issues related to health influence the final design.

4.2.18 Commentary will be provided on how the design of the Garden Bridge has responded to any recommendations arising out of the HIA.

4.2.19 Where mitigation has already been identified to mitigate any potential impacts, for example through the EIA process, this mitigation will be cross-referenced in the HIA. The responsible organisation(s) and the timing of actions required to implement any recommendations made in the HIA will also be identified.

Reporting

4.2.20 The findings of the HIA will be presented as a free standing HIA Report which will be submitted with the planning application.

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[6] World Health Organization, Regional Office for Europe (2011). http://www.heatwalkingcycling.org

Consultation

4.2.21 This scoping report will be circulated to the Directors of Public Health in WCC, CoL, Lambeth Council, Southwark Council and Camden Council as well as Public Health England, HUDU and the borough planning officers. Any issues raised through this consultation process will be taken into consideration in the HIA.

4.2.22 Public consultation will be undertaken on the Garden Bridge between 1 November 2013 and 20 December 2013 https://consultations.tfl.gov.uk/rivercrossings/garden-bridge. Opportunities will be sought to obtain feedback on health related issues through this process.

Limitations of the study

4.2.23 Literature and baseline data used in the study will be limited to readily available public and published sources. The information contained within the ES and other project documents will be used to characterise the study area and identify impacts on health determinants.

4.2.24 The approach to the assessment of health impacts will generally be qualitative, identifying likely positive and negative impacts based on the causal relationships between determinants and health outcomes identified within the literature reviewed. The assessment will not, with the exception of the HEAT tool, attempt to quantify the actual changes in population health resulting from the development.

5 Initial scoping outcomes

5.1.1 As outlined in paragraph 4.2.6, a scoping workshop structured around the HUDU matrix was used to identify the scope of health determinants relevant to the Garden Bridge.

5.1.2 A copy of the completed HUDU matrix is provided in Appendix 1. This provides information on:

- Which determinants are likely to be affected by the proposed development;
- Whether they will be affected during construction and/or operation;
- What the potential health impact is likely to be (i.e. positive, negative or neutral); and
- Also identifies initial considerations for the design team to reduce any potential negative impacts, and enhance any potential positive impacts on health.

5.1.3 The initial scoping assessment allowed the prioritisation of determinants for further assessment and those that were not relevant to the Garden Bridge were discussed and subsequently removed.

5.1.4 The following determinants will be subject to further assessment within the HIA.

Priority impact areas:

- Accessibility and active travel;
- Access to open space and nature; and
- Crime reduction and community safety.

Other potential impact areas:

- Air quality, noise and neighbourhood amenity;
- Access to healthy food;
- Access to work and training;
- Social cohesion and lifetime neighbourhoods;
- Minimising the use of resources; and
- Climate change.

5.1.5 The following determinants have been scoped out of any further assessment within the HIA:

- Housing quality and design - there would be no homes included in the proposed development. Therefore access to decent and adequate housing is not an issue.
- Access to healthcare services and other social infrastructure - the proposed development would not impact on existing health or social care services or influence the demand and/or capacity of public services.

6 Input to design

6.1.1 Starting the HIA at an early stage of project development has enabled issues related to health to influence design, thus enhancing the benefits of the scheme for health and limiting any potentially negative impacts on health.

6.1.2 Outputs from the HIA scoping workshop have been discussed with the design team through a design workshop held at the beginning of September 2013. Key design considerations identified for health include:

Determinants	Initial design considerations
Accessibility and active travel	• Improve onward links for pedestrians, including the ability to navigate through the surrounding environment, accessibility, step-free links to public transport. • Provisions of Barclays cycle hire stands and

Determinants	Initial design considerations
	secure cycle parking at each end of the bridge to promote active travel. • Consider public realm, road improvements at either end of the bridge, improve walking/cycling environment, potential for positive impacts, connections into green network. • Make the streets look and feel safer to pedestrians by implementing measures such as traffic calming and wider pavements at each end of the bridge. • Improve the pedestrian and cyclist experience on neighbouring bridges to accommodate the increase in visitors viewing the Garden Bridge from Waterloo Bridge and Blackfriars Bridge. • Temporary footpath diversions during construction to be accessible.
Access to open space and nature	• The Garden Bridge should be smoke free and alcohol free. • Lifts should ideally be as transparent as possible on the top half to reduce anti-social behaviour and negative impacts on those with claustrophobia. • Walkways should ideally be sufficiently wide for two wheelchairs to pass. • Navigation aids for those with sensory impairments (not just tactile paving). • Include those with sensory impairments. • Consider range of seating options to meet needs of disabled, children and the elderly. Design should consider height of seating and presence of handrails or other similar structures. • Ensure lighting does not have an adverse impact on those with light sensitive disabilities. • Consider integrating space for children's informal play at the landing points.
Crime reduction and community safety	• Management strategy for the bridge should include measures to reduce slip and trip hazards. • Design out suicide risk. • Consider secured by design principles, including lighting and designing out crime hotspots.

Determinants	Initial design considerations
	• Consult on fear of crime.
Air quality, noise and neighbourhood amenity	• Not a design issue. See matrix in Appendix 1 for recommendations related to management practices during construction and operation.
Access to healthy food	• Consider opportunities for growing food at the landing points of the bridge.
Access to work and training	• Not a design issue. See matrix in Appendix 1 for recommendations related to management practices.
Social cohesion and lifetime neighbourhoods	• Design spaces for the community to gather, and space for events. • Consider providing space for children's informal play at the landing points. • Consider education boards – potential topics could include history of the Thames, plants or climate change? • Incorporate interest for young children i.e. information boards, interactive displays, nature trail. • Consult young people
Minimising the use of resources	• Materials should be locally sourced, where possible, and consideration should be given to pre-fabrication off-site to minimise construction waste.
Climate change	• Consider recycling of materials and the potential for renewable energy e.g. for lighting. • Provision of shade/shelter from the sun and the wind. • Provision of a water drinking fountain • Avoid plants with poisonous berries that may have health impacts for small children. • Trees should be sourced from the UK where possible. • Planting choices should enhance biodiversity, encourage insects.

6.1.3 The design team responded positively to these design considerations and further details on how these have been integrated into design, or informed design changes will be outlined in the final HIA report.

7 Next steps

7.1.1 The HIA team will continue to engage in ongoing dialogue with the design team on health related issues until the design of the Garden Bridge is finalised.

7.1.2 An HIA report will be produced for submission with the planning application for the Garden Bridge in April 2014.

Appendix 1

HUDU matrix

HUDU Planning for Health 'Rapid Health Impact Assessment Matrix

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
Housing quality and design					
1.1	Does the proposal seek to meet all the health and wellbeing credits contained in the Code for Sustainable Homes?	N/A	**There would be no homes included in the proposed development. Therefore access to decent and adequate housing is not an issue.**	N/A	
1.2	Does the proposal address the housing needs of older people, i.e. extra care housing, sheltered housing, lifetime homes and wheelchair accessible homes?	N/A		N/A	

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
1.3	Does the proposal include homes that can be adapted to support independent living for older and disabled people?	N/A		N/A	
1.4	Does the proposal promote good design through layout and orientation, meeting internal space standards?	N/A		N/A	
1.5	Does the proposal include a range of housing types and sizes, including affordable housing responding to local housing needs?	N/A		N/A	
1.6	Does the proposal contain homes that are	N/A		N/A	

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
	highly energy efficient (e.g. a high SAP rating?				
Access to healthcare services and other social infrastructure					
2.1	Does the proposal retain or re-provide existing social infrastructure?	N/A	**The proposed development would not impact on existing health or social care services or influence the demand and/or capacity of public services**.	N/A	
2.2	Does the proposal assess the demand for healthcare services and identify requirements and costs using the HUDU model?	N/A		N/A	
2.3	Does the proposal provide for healthcare services either in the form of a financial contribution or in-kind? Does a healthy facility	N/A		N/A	

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
	provided as part of the development match NHS requirements and plans?				
2.4	Does the proposal address the capacity, location and accessibility of other social infrastructure, .e.g. schools, social care and community facilities?	N/A		N/A	
2.5	Does the proposal explore opportunities for shared community use and co-location of services?	N/A		N/A	
2.6	Does the proposal contribute to meeting primary, secondary and post 19 education	N/A		N/A	

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
	needs?				
Access to open space and nature					
3.1	Does the proposal retain and enhance existing open and natural spaces?	Construction: Yes	The south landing point of the bridge will result in the removal of an area of grassed open space on the southern edge of Queens Walk. The construction traffic route for the Garden Bridge may potentially impact directly on Bernie Spain Gardens. Construction activities, including traffic movements and associated dust and noise generation may have a negative effect on Middle Temple Gardens and Bernie Spain Gardens as a result of construction. Construction impacts should be minimised through the effective implementation of the CoCP which the HIA will feed into.	Negative	Proposals should provide alternative equivalent resource to replace lost area of open space. Monitor CoCP measures to ensure that they have been effective in mitigating impacts.

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
		Operation: Yes	Enhances existing amenity value of South Bank and Temple by providing publicly accessible green space. Provides recreational value including places where people can meet or dwell. Provides quality space that is enhanced by a variety of planting. A strategy to assess a palette of accessibility options (e.g. interaction of edges, planting, and maintenance requirements) including mock ups and tests will be progressed by the design team to find a solution to meet design and accessibility requirements. Zoning for seating has been considered by design team. Details of which areas will include seating and which would be accessible will be made available as design progresses.	Positive	Consider range of seating options appropriate to 'vulnerable' groups such as the disabled, the elderly and children. Grouped seating for up to six people will be investigated as the design progresses.

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
3.2	In areas of deficiency, does the proposal provide new open or natural space, or improve access to existing space?	Construction: N/A		N/A	
		Operation: Yes	According to the Greenspace Information for Greater London index, the London Borough of Southwark, in closer proximity to the proposed Garden Bridge is deficient in access to local, small and pocket parks. Connections with other open spaces are being considered by the transport and design teams.	Positive	
3.3	Does the proposal provide a range of play spaces for children and young people?	Construction: N/A		N/A	
		Operation: Possibly	Currently uncertain as to whether the proposal meets this criterion. Possible informal play space on South Bank at end of the bridge. Design team will also investigate potential for dwell spaces to be interactive and	Uncertain	Consider incorporating interest for young children i.e. information boards, interactive displays, nature trail. Consider education boards – history, plants, climate change?

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
			'playful'. Potential for separate site in close proximity to the Garden Bridge where a plant nursery, composting facility, educational activities and festivals could take place as part of community engagement and wider Garden Bridge initiatives. Design team are in discussions with Coin Street relating to the use of Bernie Spain Gardens.		Consult with local children to find out what they would like to see on Garden Bridge. Consider issues around use by young children such as provision of toilets, baby change and breastfeeding facilities. Use by young children, and impact of the bridge as a 'destination' (e.g. needs of those likely to stay on the bridge for a period of time).
3.4	Does the proposal provide links between open and natural spaces and the public realm?	Construction: N/A		N/A	
		Operation: Yes	Garden Bridge links north and south side of the river and links South Bank from points of interest in the north, i.e. Temple Gardens and Covent Garden. Landings will be important part of community events potential, there is less space for events on the Garden	Positive	Potential to incorporate temporary habitats as part of art installations, future events and educational events.

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
			Bridge perhaps with the exception of some temporary stalls/ display space. Public realm improvements are intended for each landing and connections with other attractions and open space are being investigated by the design and transport teams.		
3.5	Are the open and natural spaces welcoming and safe and accessible for all?	Construction: N/A		N/A	
		Operation: Yes	Access is free to all thus minimising health inequalities and making the resource available to all, including vulnerable groups such as the young, elderly, and unemployed. Possible mobility issues – see Section 5 for details (also linked to EqIA). How the bridge is staffed will also affect how welcoming and safe the bridge is.	Uncertain	Management of the Bridge should ensure that it provides a safe and secure environment for both staff and members of the general public – see Section 6 for further details. Navigation aids for those with sensory impairments (not just tactile paving). Include those with sensory impairments in the consultation process.

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
					Lifts would ideally be as transparent as possible on the top half to reduce anti-social behaviour, negative impacts on those with claustrophobia.
3.6	Does the proposal set out how new open space will be managed and maintained?	Construction: N/A		N/A	
		Operation: Yes	To be managed by the Garden Bridge Trust. It was agreed that a strategy to assess a palette of accessibility options (e.g. interaction of edges, planting, and maintenance requirements) including mock ups and tests will be progressed by the design team to find a solution to meet design and accessibility requirements.	Positive	The Garden Bridge should be smoke free and alcohol free. The management strategy should include measures such as: • Ensuring there are no trip hazards • Details on watering regimes to reduce accident risk

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
					• Lighting • Maintenance – what and when. Control on maintenance vehicle movements. Garden Bridge should provide a healthy and safe place for both staff and members of the public.
Air quality, noise and neighbourhood amenity					
4.1	Does the proposal minimise construction impacts such as dust, noise, vibration and odours?	Construction: Yes	Construction impacts should be minimised through the effective implementation of the CoCP which the HIA will feed into.	Neutral	Monitor CoCP measures to ensure that they have been effective in mitigating impacts. Consider the use of river boats to bring in construction materials – minimising impacts of haulage on local roads.

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
		Operation: N/A		N/A	
4.2	Does the proposal minimise air pollution caused by traffic and energy facilities?	Construction: Yes	Construction impacts on air quality should be minimised through the CoCP which the HIA will feed into.	Neutral	
		Operation: Yes	The operational bridge minimises the impacts of air pollution by promoting walking over car use.	Positive	
4.3	Does the proposal minimise noise pollution caused by traffic and commercial uses?	Construction: Yes	Construction impacts on the noise environment should be minimised through the CoCP which the HIA will feed into.	Neutral	
		Operation: N/A		N/A	
Accessibility and active travel					

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
5.1	Does the proposal prioritise and encourage walking (such as through shared spaces)?	Construction: N/A		N/A	
		Operation: Yes	The bridge by virtue of being pedestrian only will automatically prioritise and encourage walking. Walking will be encouraged not only across the river but in the surrounding areas and beyond. The pedestrian bridge will link the north and south of the river and encourage walking in the surrounding area whilst providing a new shared public space. Walkways will be a minimum of 4m in width.	Positive	Navigation aids for those with sensory impairments (not just tactile paving). Provide signage for onwards walking routes to key tourist attractions, including links between the South Bank and Covent Garden.
5.2	Does the proposal prioritise and	Construction: N/A		N/A	

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
	encourage cycling (for example by providing secure cycle parking, showers and cycle lanes)?	Operation: Yes	The bridge is not open to cyclists – but they can push their bike across the bridge. Secure cycle stands will be provided at the northern end of the bridge to facilitate active travel and link to the proposed Barclays Cycle Superhighway on Victoria Embankment.	Negative	In order to mitigate the negative impact of this bridge for cyclists the provision for cyclists on Waterloo and Blackfriars Bridges should be improved with segregated cycle lanes, 20 mph speed limits and average speed cameras. Provide Barclays Cycle Hire Bike stands and secure cycle parking at either end of the bridge (or as close as possible) to facilitate active travel.
5.3	Does the proposal connect public realm and internal routes to local and strategic cycle and walking networks?	Construction: N/A		N/A	
		Operation: Yes	Public realm improvements are intended for each of the landings, e.g. increased pavement widths, pedestrianisation and shared zones.	Positive	Consider onwards links to footpaths and walking routes. Signage and onwards accessibility.

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
			Connections with other public realm and onward pedestrian routes are being considered by the design and transport teams. The bridge will link into the new cycle superhighway proposed along the northern bank of the River Thames.		Consider public realm and road improvements at Temple Place?
5.4	Does the proposal include traffic management and calming measures to help reduce and minimise road injuries?	Construction: Yes	Construction traffic impacts should be minimised through the CoCP and associated traffic management plans which the HIA will feed into.	Neutral	Traffic management plans should be established for the construction phase.
		Operation: Yes	Traffic management measures will be considered at either end of the bridge and on neighbouring bridges to improve the walking and cycling environment.	Neutral	Traffic management and safety measures should be implemented at either end of the bridge to reduce accident risk for pedestrians coming off the bridge, i.e. 20mph speed limits on Aldwych and neighbouring bridges, and improved pedestrian crossings and reduced lanes of traffic on Aldwych.

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
5.5	Is the proposal well connected to public transport, local services and facilities?	Construction: N/A		N/A	
		Operation: Yes	Step-free links available to both Waterloo and Southwark Tube stations and both have step-free access to trains. Temple Underground Station has no step-free access, but step-free access may form part of the overall scheme for the bridge. There is a large bus network, range of Barclays Cycle Superhighways and taxis on both sides of the river.	Positive	Need to examine local bus routes and ensure there is Barclays Cycle Hire stands and secure cycle parking at both ends of the bridge
5.6	Does the proposal seek to reduce car use by reducing car parking provision, supported by the controlled parking zones, car clubs and	Construction: N/A		N/A	

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
	travel plan measures?	Operation: N/A		N/A	
5.7	Does the proposal allow people with mobility problems or a disability to access buildings and places?	Construction: N/A		N/A	
		Operation: Yes	Step-free access, in the form of lifts will be provided at both ends of the bridge. Work has been done on the benefits of lifts compared to ramps and has concluded that Port of London Authority height clearance requirements mean that that the length of the ramp itself might become a barrier to accessibility to the groups it would be intended to help and therefore lifts are likely to be the preferable option. Step-free signage will be incorporated into the design. Walkways will be at least 4m in width,	Positive	Provide navigation aids across the bridge for those with sensory impairments. Involve those with sensory impairments in the design and consultation process. Provide rest spots. Lighting should be designed so that it does not have an effect on those with light sensitive disabilities.

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
			which should allow two wheelchairs to pass at any one time.		
Crime reduction and community safety					
6.1	Does the proposal incorporate elements to	Construction: N/A		N/A	

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
	help design out crime?	Operation: Yes	Secured by design principles will be considered in the Design and Access Statement and discussed with TfL Secured by Design specialists. Planting will be transparent, rather than dense planting and secluded areas will be minimised. Lighting will be sufficient to reduce dark areas without impacting on the ecology.	Uncertain	Consider secured by design principles – including lighting, designing out crime hotspots, security of lifts etc. Ramped access at each end of the bridge would be preferable to lifts as lifts are crime hotspots and magnets for anti-social behaviour. Fear of crime can also prevent use and should be addressed. Design should address suicide risk and design out opportunities. Staffing levels need to be considered so that there may be a visible presence incorporated into the management strategy. Making the Garden Bridge alcohol free would make it a safer and more welcoming environment for all and dissuade anti-social behaviour.

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
6.2	Does the proposal incorporate design techniques to help provide people feel secure and avoid creating 'gated communities'?	N/A		N/A	
6.3	Does the proposal include attractive, multi-use public spaces and buildings?	Construction: N/A		N/A	
		Operation: Yes	Includes attractive public spaces and possibly a building of currently undefined use, at the southern landing point.	Positive	Any buildings open to the public should be fully accessible and inclusive.
6.4	Has engagement and consultation been carried out with the local community?	Construction: Yes	This will be carried out.	Positive	Refer to Section 9 for other engagement ideas.
		Operation: Yes			

Access to healthy food					
7.1	Does the proposal facilitate the supply of local food, i.e. allotments, community farms and farmers' markets?	Construction: N/A		N/A	
		Operation: Yes	Current potential is uncertain. Potential concerns around sponsorship. If sponsored by a fast-food outlet, this could be considered to be a negative effect in terms of promoting healthy food choices. Question on whether food vendors will be allowed on the bridge and the sort of food that they might sell. Question on whether a food offering may occupy space within the structure at the southern landing point.	Uncertain	Ensure sponsorship does not promote activities or behaviours that impact negatively on health. Consider opportunities for growing food on the bridge? Food gardens or food walls?
7.2	Is there a range of retail uses, including food stores and smaller affordable shops for social enterprises?	Construction: N/A		N/A	
		Operation: Yes	Current potential is uncertain. A food offering may potentially occupy a potential unit within the southern	Uncertain	Ensure that any uses do not promote activities or behaviours that impact negatively on health.

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
			landing point structure. Question on whether food vendors will be allowed on the bridge and the sort of food that they might sell.		
7.3	Does the proposal avoid contributing towards an over-concentration of hot food takeaways in the local area?	Construction: N/A		N/A	
		Operation: Yes		Neutral	If any new food vendors are included in the landing structures or surrounding areas they should not be unhealthy fast food outlets.
Access to work and training					
8.1	Does the proposal provide access to local	Construction: Yes	There will be jobs provided. Currently uncertain as to whether it	Uncertain	Consider opportunities to source local employment during

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
	employment and training opportunities, including temporary construction and permanent 'end-use' jobs?	Operation: Yes	meets these criteria, but TfL has standards for procurement.		construction and operation through promotion of jobs in local job centres and schools/colleges. Include apprentice and volunteering schemes.
8.2	Does the proposal provide childcare facilities?	Construction: N/A		N/A	
		Operation: N/A	Toilets are not expected to be provided for public access. Alternatives such as the use of existing public and private facilities were discussed and signage will be provided to those facilities.	N/A	
8.3	Does the proposal include managed and affordable workspace for local businesses?	N/A		N/A	

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
8.4	Does the proposal include opportunities for work for local people via local procurement arrangements?	Construction: Yes Operation: Yes	There is an aspiration to champion local businesses; however the TfL procurement policy is being investigated.	Uncertain	Local employment and the use of local suppliers during construction and operation should be promoted.
Social cohesion and lifetime neighbourhoods					
9.1	Does the proposal connect with existing communities, i.e. layout and movement which avoids physical barriers and severance and land uses and spaces which encourage social interaction?	Construction: N/A		N/A	
		Operation: Yes	Reduces community severance through improved north-south links and encourages interactions in the middle. Need more details of the onward routes for walking and cycling at each end of the bridge.	Positive	Provide places where people can meet and interact, e.g. grouped seating for up to six people is currently being investigated. Can the bridge be used for community events?

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
9.2	Does the proposal include a mix of uses and a range of community facilities?	Construction: N/A		N/A	
		Operation: Yes	Includes walking and gathering spaces. The potential for including education boards, informal play spaces and a separate community area in close proximity to Garden Bridge is currently being investigated by the design team.	Positive	Include education boards, e.g. plants, history of the Thames etc. Consider use of Garden Bridge for 'green gyms' (i.e. where GPs refer patients for gardening). Potential to incorporate temporary habitats as part of art installations, future events and educational events is being explored.
9.3	Does the proposal provide opportunities for the voluntary and	Construction: N/A		N/A	

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
	community sectors?	Operation: Yes	Currently uncertain	Uncertain	Consider using public art to foster community capital and enhance the public realm. Involve the community, particularly children in planting. Opportunities for the scheme sponsor to be a charity or a trust.
9.4	Does the proposal address the principles of Lifetime Neighbourhoods?	N/A		N/A	
Minimising the use of resources					
10.1	Does the proposal make best use of existing land?	Yes		Positive	
10.2	Does the proposal encourage recycling	Construction: N/A		N/A	

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
	(including building materials)?	Operation: Possibly	Currently uncertain, but design should address this (see Sustainability Appraisal work).	Uncertain	
10.3	Does the proposal incorporate sustainable design and construction techniques?	Construction: Yes	Design team are investigating soil sourcing; pre fabrication to reduce waste; and recycling of aggregate (concrete, cement content). Design team will provide some narrative on sustainability of design. Cupronickel has long life span of 150 years.	Uncertain	Design team to include sourcing in appraisal of materials.
		Operation: Yes	The naturalistic planting scheme will include some native English plantings.	Neutral	The sourcing and transport of trees and planting should, where possible, minimise travel distance and consider sustainability credentials of source.
Climate change					

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
11.1	Does the proposal incorporate renewable energy?	Construction: Possibly	Currently uncertain, but design should address this (see Sustainability Appraisal work).	Uncertain	
		Operation: Possibly	Renewable energy measures should have a real benefit to the development. Two are being investigated – ground source heat pump to use rejected heat (carbon reduction measure), and potential for energy generation from tidal flow.	Uncertain	Lighting should make use of renewable energy where possible.
11.2	Does the proposal ensure that buildings and public spaces are designed to winter and summer temperatures, i.e. ventilation, shading and landscaping.	Construction: N/A		N/A	
		Operation: Potentially	The effect of wind during winter and the effect of wind on trees are being investigated by the design team and landscape team respectively.	Positive	Bridge should include areas that provide shelter from the sun and wind. The option to use high backed seating (to provide shelter from wind) has been raised. Bridge should include water drinking

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
					fountain and seating in shaded areas to protect people from sunburn.
11.3	Does the proposal maintain or enhance biodiversity?	Construction: N/A		N/A	
		Operation: Yes	A planting scheme is being developed which will have biodiversity at the core.	Positive	Planting choices should enhance biodiversity and should encourage insects. Possibly consider bird and bat boxes as well, or bug homes/insect boxes etc. Avoid plants with poisonous berries that may have health impacts for small children. The bridge could be used as an opportunity to educate the public on climate change issues and the potential to incorporate temporary habitats as part of art installations, future events and educational

	Assessment criteria	Relevant to construction / operation	Details/evidence	Potential health impact	Initial considerations for the design team and further recommendations
					purposes is being explored.
11.4	Does the proposal incorporate urban drainage techniques?	Construction: N/A		N/A	
		Operation: Yes	Probably not an issue as drainage will go straight to the river. Drip irrigation is to be used for planting.	Negative	Reduce potential negative impacts of runoff on carriageways, walkways, cycle paths at either end of the bridge to reduce trip hazards.

Appendix 4

Consultation responses

Response from the Directors of Public Health on the HIA Scoping Report

Consultee	Response	How HIA has responded to these comments
Dr Ruth Wallis DPH Lambeth and Southwark	This exciting proposal for a Garden Bridge to connect the Temple area to the South Bank invites us to imagine **a highly visible iconic structure** that has **potential to promote important public health behaviours including active travel, gardening, food growing, social connectivity and relaxation.** The Garden Bridge offers **a new space for ecological and social interaction, expanding the pedestrian network and beautifying the area,** all of which have importance for public health.	HIA covers active travel (section 5.2), gardening (5.1), food growing (5.6), social connectivity (5.4).
Dr Ruth Wallis DPH Lambeth and Southwark	As we know creating sustained change to everyday health behaviours is a great challenge for society. Healthy environments that enable healthy behaviours are of course one solution that can ultimately help us live happier, longer lives. If a bridge can help to do this and inspire other structures to follow suit then that would be a great achievement.	No response required.
Malcolm Souch, NHS London Healthy Urban Development Unit	Thanks for the opportunity to comment on the scoping report and I'm pleased to see the HUDU matrix being used.	No response required.

Consultee	Response	How HIA has responded to these comments
Dr Ruth Wallis DPH Lambeth and Southwark	It would be useful to have some assurance of the values and ethos of this project and how these will be sustained into the future. The approach taken to manage this project including sponsorship, vending opportunities and communications should also take a health and wellbeing promoting approach if looking to demonstrate a real commitment to improving health and reducing health inequalities, and this may be something we can help with.	HIA covers vending opportunities (5.6).
Malcolm Souch, NHS London Healthy Urban Development Unit	The geographical and temporal scope and the extent of the local and neighbourhood assessment areas appear to be appropriate. The neighbourhood assessment area adjoins the London Borough of Hackney and you could consider consulting with the local authority on a draft HIA report.	No consultation with Hackney. Have already gone wider in geographical scope to include LBC, CoL, and LBS. Won't be consulting on HIA Report.
Dr Ruth Wallis DPH Lambeth and Southwark	It would also be of interest to know if the HIA methodology has been used on similar projects such as the New York Highline and whether there is learning to be shared from that project.	The Highline had an Environmental Impact Assessment and a Final Environmental Impact Statement was produced. This contained a public health chapter. The FEIS stated based on a preliminary screening analysis that it was determined that a full assessment was un-necessary and that no significant adverse impacts are expected. The screening assessed air quality, waste/pests, noise and odours. The FEIS makes no mention of health benefits of walking. It states there would be extra A&E admissions (number not significant), no significant adverse impact on outpatient care facilities, there

Consultee	Response	How HIA has responded to these comments
		needs to be a construction health and safety plan. In summary GB has greater coverage of health issues, and includes all those considered by methodology used for Highline
Dr Penelope Bevan, DPH City & Hackney	The proposed population/community analysis is inadequate, as it will only look at the resident population of the surrounding areas. As the City is disproportionately populated by commuters during the daytime, this population's characteristics and needs must also be considered.	Baseline updated to cover daytime population (4.2.6 – 4.2.9)
Malcolm Souch, NHS London Healthy Urban Development Unit	The policy review (para 4.2.1) should also include borough Local Development Frameworks / Local Plans and any area specific policies or guidance, ie the Waterloo SPD and Blackfriars Road SPD. A review of health and wellbeing strategies could demonstrate how the bridge could support local health objectives and priorities.	Policy review includes review of health and wellbeing strategies for the five boroughs (section 3 of policy review).
Malcolm Souch, NHS London Healthy Urban Development Unit	The baseline data gathering (para 4.2.5) should include local Joint Strategic Needs Assessments and the Public Health Outcomes Framework.	Public Health Outcomes Framework data has informed the HIA baseline.

Consultee	Response	How HIA has responded to these comments
Dr Billett, Camden and Islington Director of Public Health	Baseline data gathering should include a review of the Joint Strategic Needs Assessments of the boroughs within the Neighbourhood Assessment Area. For example, whilst Public Health England's 2013 profile for Camden shows that physical activity levels among adults is similar in Camden to England, the JSNA shows that, at a local level, men are more active than women, lower income groups in Camden were less active than those on higher income, and people with a long-term limiting illness were less active than people without a long-term limiting illness. Camden Joint Strategic Needs Assessment. Chapter 9. Physical Activity. How important is this issue in Camden? http://www.camden.gov.uk/ccm/content/social-care-and-health/health-in-camden/joint-strategic-needs-assessment-2012/chapter-9-physical-activity-.en?page=3	The JSNAs have been reviewed, but there is a lack of consistency in the depth of data available across the JSNA documents for the five boroughs that make up the baseline. They also all use different years for their data. As the health profiles for the local area assessments are made up from all five boroughs there needs to be a level of consistency in the data used. It was therefore deemed that public health profiles etc would provide more consistent and equitable data across all five boroughs. Normally where data from only one borough is used, there would be a greater reliance on the JSNAs.
Malcolm Souch, NHS London Healthy Urban Development Unit	The scoping approach to identify and select health determinants and impact areas (para 4.2.6) is supported.	No response required.
Malcolm Souch, NHS London Healthy Urban Development Unit	The literature and evidence review (para 4.2.10) appears appropriate. The key reference material could include any studies of existing footbridge bridges, ie the Millennium Bridge and Golden Jubilee Bridge (Hungerford Footbridges) to identify any construction or operational issues and any quantitative evidence of health impacts, ie physical activity.	No available data identified.

Consultee	Response	How HIA has responded to these comments
Malcolm Souch, NHS London Healthy Urban Development Unit	Assessment of health impacts (para 4.2.11) – the HUDU matrix approach is supported.	No response required.
Malcolm Souch, NHS London Healthy Urban Development Unit	Para 4.2.15 refers to health inequalities and the potential for disproportionate impacts on certain vulnerable groups. Have receptors and vulnerable groups been identified as this stage or will they be identified using the neighbourhood area profile?	Vulnerable groups identified (4.4)
Malcolm Souch, NHS London Healthy Urban Development Unit	Recommendations (para 4.2.17) - the approach to feed recommendations into the ongoing design process is strongly supported as is the cross-reference to EIA mitigation, which is particular relevant with regard to construction impacts.	No response required.
Dr Ruth Wallis DPH Lambeth and Southwark	It is important that local people and potential vendors in the area have been properly engaged in the consultation, and that they benefit from the bridge as well as commuters and tourists.	Outcomes of public consultation reported (3.4)
Malcolm Souch, NHS London Healthy Urban Development Unit	Consultation (para 4.2.22) – it is important that public consultation feedback is used to inform the HIA report and that community engagement on the planning application specifically addresses health issues and impacts.	Outcomes of public consultation reported (3.4) and aspects related to health highlighted.
Malcolm Souch, NHS London Healthy Urban Development Unit	The selected determinants and impact areas appear to be appropriate, although the phrase ‘priority impact area’ should be defined.	No response required.

Consultee	Response	How HIA has responded to these comments
Dr Penelope Bevan, DPH City & Hackney	The garden bridge has the potential to impact positively upon travel for City communities; however, it would be beneficial to assess this through a detailed analysis of current commuter flows in the area, and how the bridge might link to existing transport infrastructure.	Text on commuter flows and links to existing transport infrastructure provided (5.2)
Dr Ruth Wallis DPH Lambeth and Southwark	However a structure does not exist in isolation and it is important that this project works alongside partners for a broader vision for improvements to walking and cycling in the surrounding area including neighbouring bridges.	Text on links to existing transport infrastructure including footpaths and cycle paths provided (5.2)
Dr Billett, Camden and Islington Director of Public Health	To support increased walking, the Garden Bridge should be included on Legible London street furniture/signposting in the area.	Text on signage provided (5.2.28)
Dr Billett, Camden and Islington Director of Public Health	This section of the scoping document states that secure cycle stands will be provided at the northern end of the bridge. We would strongly endorse the provision of secure cycle parking and cycle hire stands at both ends of the bridge as identified under further recommendations.	Text on cycle stands and connection to existing and proposed cycle routes provided (5.2)
Dr Billett, Camden and Islington Director of Public Health	Step free access at both ends of the bridge is encouraged. However, stairs/ramps should be welcoming so that they encourage pedestrians to use stairs/ramps rather than lifts wherever possible.	Lift and stair entrances have been designed to maintain lines of sight and ensure clear visibility of lift and stair access (5.3)

Consultee	Response	How HIA has responded to these comments
Graham King, Westminster (incorporates DPH comments)	The Garden Bridge draft HIA has made a strong case for prioritising health impacts by emphasising linkages (9.1) across the catchment area. Positive impacts are perpetuated by capitalising on existing assets through a network of pedestrian and cycling routes on either side of the bridge, to target increases in obesity and other health impacts emerging from increasingly low levels of population activity. Therefore **the opportunity this bridge carries to help the local community to make better, more mobile choices has huge potential for the health of the immediate population.**	No response required.
Dr Billett, Camden and Islington Director of Public Health	How the Garden Bridge could support local health objectives such as increasing physical activity. Healthy weight healthy lives' is a whole community issue in Camden: for local government, local NHS, schools, parks, councillors, businesses, doctors and community groups to play their part.Targeted activities and volunteering opportunities in connection with the scheme have the potential to attract Camden residents who may benefit to a greater extent compared with the general population.Pro-Active Camden is a partnership of organisations and individuals who share a common commitment to increase participation in sport and physical activity and encourage the people of Camden to lead more active and healthy lifestyles. **The Garden Bridge Trust should work with the Pro-active Central London partnership (of which all boroughs in the Neighbourhood Area Assessment are members) to ensure that opportunities at the Garden Bridge are aligned with local strategies and delivery.**	Recommendations, that support local health objectives, are included in the HIA. These include: • Involve the community, particularly children in planting. • Consider opportunities for incorporating informal play for children, either on the Garden Bridge or at or near the landing points. • The Garden Bridge Trust should also consider use of the Garden Bridge for 'green gyms' (i.e. where GPs refer patients for gardening).

Consultee	Response	How HIA has responded to these comments
Dr Billett, Camden and Islington Director of Public Health	Inclusion of the Garden Bridge on Legible London and other signposting will facilitate access by residents and visitors/employees at a greater distance from the bridge, including areas of Camden and Islington.	Text on signage provided (5.2.28).
Dr Penelope Bevan, DPH City & Hackney	It would be beneficial to properly assess the need for public toilets in the area, considering that the bridge proposes to become a destination in itself, as current facilities may be inadequate, and this may discriminate disproportionately again older people and disabled people, as set out in the WHO Healthy Cities.	Signage would direct visitors to the closest facilities.
Dr Billett, Camden and Islington Director of Public Health	A range of characteristics has been associated with increased access to open spaces. A review of JSNAs from the Neighbourhood Assessment Area boroughs will help to design a bridge that appeals to those groups who may benefit more from access to the bridge, for example groups who are less physically active.	Assessment on potential health effects of access to open space covered in section 5.1.
Dr Billett, Camden and Islington Director of Public Health	Whilst the Health Impact Assessment identifies a Neighbourhood Assessment Area in proximity to the proposed bridge for detailed assessment, there will be opportunities to promote the bridge across London, including more northerly parts of Camden and also Islington, which lies a little over 1km from Temple Station as the crow flies.	Comment noted

Consultee	Response	How HIA has responded to these comments
Graham King, Westminster (incorporates DPH comments)	The draft HIA neglects to recommend the bridge as smoke free. To build on the draft HIA's commitment to minimise air pollution (4.2) and enhance the social interaction (9.2) it is recommended the bridge be designated a smoke free environment. This is particularly relevant given that the bridge is likely to be popular with families with young children many of whom will want to spend significant time in the gardens.	Section 5.3 recommends that Garden Bridge should be smoke free.
Dr Penelope Bevan, DPH City & Hackney	Whilst we would support the aspirations that the bridge will be alcohol and smoke free, it would be useful to have elaboration on how this might be achieved, especially since there is a very large pub a the north end of the bridge. The concept of an alcohol free area may be unrealistic, especially if the areas at either end are not.	Issue to be followed up by Garden Bridge Trust
Rachel Flowers FFPH, FCIEH, Public Health Specialist-Planning, Greater London Authority	Enhancing on Penny's comments Re smoke free, alcohol free- the issue of enforcing this and how this might work. There is, at the least, mental anguish involved in the community requesting non compliers. Communications are key- there are some good experience from open aired venues re smoke free- Railway stations and railway property for example. There are also examples re alcohol free however visible community enforcement presence does assist this	See above.
Dr Ruth Wallis DPH Lambeth and Southwark	Creating a smoke and alcohol free space in line with moves to do the same for parks would be another useful addition in maximising the health benefits of this project.	See above.
Dr Billett, Camden and Islington Director of Public Health	We support the use of transparent planting as this deters against using otherwise hidden spaces for the consumption of alcohol and for substance misuse.	No response required.

Consultee	Response	How HIA has responded to these comments
Dr Billett, Camden and Islington Director of Public Health	Staffing of the bridge will be an important factor in promoting the bridge as a smoke-free and alcohol-free space, although it is not clear how this might be enforced	See above.
Dr Billett, Camden and Islington Director of Public Health	The smoke-free and alcohol-free concept of the Garden Bridge is an exciting development. This aspect of the proposal should be carefully monitored and evaluated as it has the potential to inform similar smoke-free and alcohol-free policies in other parks and open spaces.	No response required.
Dr Penelope Bevan, DPH City & Hackney	It would also be useful to consider whether opening hours will be restricted, and what impacts these might have on crime and community safety, as well as the resources impact of policing the area at night.	Opening hours are outlined in section 2.2. Section 5.3 outlines security measures to prevent unauthorised access at night.
Dr Penelope Bevan, DPH City & Hackney	It will be worth considering in detail the issues of lighting on the bridge to give a greater sense of a “safe space”.	Safety has been an important consideration of the lighting strategy for the Garden Bridge (5.3).
Dr Penelope Bevan, DPH City & Hackney	We are interested in the idea of “designing out” suicide. Whilst you can certainly reduce the risk through design, although it cannot be removed all together: unless other areas close by have the same measure in place, it will just move the site.	A need to reduce suicide risk was highlighted through the HIA process and consequently the balustrade design has been revised to deter people from climbing over them, mitigating opportunities for suicide (5.3).
Graham King, Westminster (incorporates DPH comments)	Further design details related to the initial consideration towards addressing suicide risks (6.1) should be provided with sufficient detail.	See comment above.

Consultee	Response	How HIA has responded to these comments
Dr Penelope Bevan, DPH City & Hackney	The Cities Health and Wellbeing Board has identified air quality as a key priority, as the City of London has one of the highest levels of mortality attributed to particulate air pollution (PHOF). As such we would seek reassurances that this project will not contribute negatively to this, specifically, through increased levels of lorry traffic during construction.	As the Code of Construction Practice includes all necessary mitigation measures for this level of dust risk, the air quality assessment within the ES has assessed that the effects of construction-related dust would be 'not significant' on the north or south banks (5.5).
Rachel Flowers FFPH, FCIEH, Public Health Specialist-Planning, Greater London Authority	Enhancing on Penny's comments I would add that it's not just the particulate issues re building it's also the noise, disruptions and general and anguish that construction of this scale brings. Some of this can be managed a little working with local elected members and community group who can provide community Intel to inform and support this. (at a more granular level it may be worthwhile having a discussion with Director of Adult Social Services and Director of Children Services highlighting the construction plans and where it would disrupt the borough as they would be aware of vulnerable adults and children and where they are located)	The noise assessment concludes that there would be no significant noise effects on residential receptors to the north or south of the River Thames as a result of construction activities, road-based construction traffic or river based construction traffic (5.5).
Dr Ruth Wallis DPH Lambeth and Southwark	The immediate impact on local communities is also something that public health are keen to learn more about, in particular regards to the disruption due to construction phase in an area with further construction plans already in place.	The Code of Construction Practice, that is referenced in this HIA outlines how: 'The Promoter and/or the Contractor will take all reasonable steps to engage with stakeholders in the local community, focussing on those who may be affected by the construction works including residents, businesses, community resources and specific vulnerable groups'. And that: 'The Promoter and/or the Contractor will develop a stakeholder engagement programme and will

Consultee	Response	How HIA has responded to these comments
		provide appropriately experience community engagement personnel to implement the programme, provide relevant information on the project and be the point of contact to resolve community issues'.
Rachel Flowers FFPH, FCIEH, Public Health Specialist-Planning, Greater London Authority	Enhancing on Penny's comments the consideration of routes to and from key services for populations and if it impacts on bus routes- GP practices etc, see above.	Issues related to access and connectivity to local services are covered under 'accessibility and active travel'(5.2).
Dr Billett, Camden and Islington Director of Public Health	We have no further comments in this section.	No response required.
Dr Billett, Camden and Islington Director of Public Health	Consideration needs to be given regarding the deterrence of illegal food vendors from the bridge and surrounding area. Enforcement by environmental health and trading standards may be complicated as the bridge is located across two boroughs. If a food offering is included at the southern end of the structure, opportunities and constraints in ensuring that healthy food is offered and unhealthy options discouraged should be considered – any food vendors should ensure compliance with the Healthy Catering Committment.	Recommendations provided in the HIA (5.6) include: • Ensure that sponsorship does not promote activities or behaviours that impact negatively on health, for example, sponsorship by fast food outlets. • If any new food vendors are included in the landing structures or surrounding areas they should not be unhealthy fast food outlets or vendors.

Consultee	Response	How HIA has responded to these comments
Dr Billett, Camden and Islington Director of Public Health	This section of the HIA should look at opportunities for skills training and local employment in the construction and operational phases. Opportunities for volunteering, potentially as part of a "green gym" are encouraged as there is evidence that these can improve mental and physical health.	Section 5.7 recommends that 'During both the construction and operational phases opportunities should be considered to source local employment through promotion of jobs in local job centres and schools/colleges. Job vacancies should be advertised in local employment centres, community centres and through local media'. Section 5.1 recommends that 'The Garden Bridge Trust should also consider use of the Garden Bridge for 'green gyms' (i.e. where GPs refer patients for gardening)'.
Dr Penelope Bevan, DPH City & Hackney	The bridge has the potential to bring together the surrounding communities; however, it should be acknowledged that these include the relatively deprived population of the Coin Street Community and the extremely wealthy population of the Temples – whether these two groups will realistically participate in joint activities is questionable.	No response required.
Rachel Flowers FFPH, FCIEH, Public Health Specialist-Planning, Greater London Authority	Enhancing on Penny's comments The bringing together of communities could start linked into the above, as well as other things	Section 5.4 makes recommendations to bring communities together including through: • community art; • involving the community in planting and maintenance schemes; and • possible inclusion of a community facility in the proposed south landing building.

Consultee	Response	How HIA has responded to these comments
Dr Billett, Camden and Islington Director of Public Health	One study from the United States found that activities and the number of facilities were strongly correlated with park use and energy expended. A literature review found that that access to a variety of facilities in parks that supported active and passive recreational activities were important, and that social clubs and neighborhood associations were also linked positively to park use and physical activity. This would suggest that community activities should be considered on or around the bridge and associated facilities. Community events may lead to activities targeted at groups who may benefit more, thus contributing to reducing health inequalities. Cohen DA et al. Use of neighbourhood parks: does socio-economic status matter? A four-city study. Public Health 2013;127(4): 325–332 McCormack GR et al. Characteristics of urban parks associated with park use and physical activity: A review of qualitative research. Health & Place 2010;16:712–726	No response required.
Dr Billett, Camden and Islington Director of Public Health	The inclusion of space for community activities, and providing themed information (including, for example, on growing your own food at home), have the potential for encouraging healthier lifestyles, and should be targeted at key groups who have the potential to benefit to a greater extent.	Section 5.4 makes recommendations to involve the community through: • involving the community in planting and maintenance schemes; and • possible inclusion of a community facility in the proposed south landing building.
Dr Billett, Camden and Islington Director of Public Health	We have no further comments on this section.	No response required.

Consultee	Response	How HIA has responded to these comments
Malcolm Souch, NHS London Healthy Urban Development Unit	We would query why access to healthcare services and other social infrastructure has been scoped out of the HIA. The new footbridge is likely to increase access to public services by removing a major barrier to pedestrian movement (the River Thames) and is likely to expand catchment areas to facilities, notably GP surgeries and health centres.	Issues related to access and connectivity to local services are covered under 'accessibility and active travel'(5.2).
Dr Billett, Camden and Islington Director of Public Health	This section of the HUDU matrix should examine the potential for community facilities associated with the Garden Bridge, including those that may be used by schools, youth clubs, community organisations, etc A separate site in close proximity to the Garden Bridge where programmed activities can take place may encourage access. One study from the United States found that activities and the number facilities were strongly correlated with park use and energy expended parks. (Cohen DA et al. Use of neighbourhood parks: does socio-economic status matter? A four-city study. Public Health 2013;127(4): 325–332). A full literature search may provide further evidence Opportunities for activities and information that encourage food growing at home should be considered	Section 5.4 recommends the possible inclusion of a community facility in the proposed south landing building. Section 5.6 recommends that opportunities should be considered for growing food on the Garden Bridge or at the landing points. This could take the form of food gardens or food/salad walls. These could be installed at, or on the landing points.
Dr Penelope Bevan, DPH City & Hackney	Next steps (para 7.1.2) – we suggest that the HIA report includes arrangements for monitoring the recommendations and mitigation measures and the need for any follow-up study or impact assessment resulting from the operation, use and management of the bridge, for example related to community safety issues. Any follow-up study could provide quantitative data on walking activity and related health benefits.	The HIA report does include information on monitoring.

Appendix 5

HEAT modelling work

Estimating health benefits from the Garden Bridge - Health Economic Assessment Tool (HEAT)

Summary

Based on the World Health Organization (WHO) Health Economic Assessment Tool (HEAT)[1] for walking, the Garden Bridge would prevent 0.37 to .70 deaths per year, giving a current value of total benefit of between £12,131,000 and £23,078,000 over the thirty years of the appraisal period.

Methodology and assumptions

Analysis has been carried out to estimate the health benefits of the Garden Bridge. The analysis is based on the World Health Organization (WHO) Health Economic Assessment Tool (HEAT) for walking and cycling using a set of assumptions about regular walking trips generated by the Garden Bridge. This is the method recommended by the Department for Transport (DfT) for assessing health benefits of walking and cycling initiatives.

HEAT is designed for assessing the benefits of reduced premature mortality resulting from walking and cycling initiatives. It is designed to assess:

- Impacts at a population (not individual) level
- The benefits of habitual behaviour, not one-off or irregular events
- The benefits to adult populations, assumed to be around 20 to 64 years
- Normal populations where the level of physical activity is not very high

The assumptions made are:

- Only health benefits from walking are assessed because cycling will not be permitted on the Garden Bridge, although bicycles may be wheeled across.
- The daily number of walk trips included in this assessment is 864. This is the number of existing bus trips that the Demand Forecasting Note predicts will divert to walking across the Garden Bridge. Although the Demand Forecasting Note forecasts annual visitors of 6.8 million and around 25,000 per weekday, it cannot be determined what proportion of these trips will be new, regular walk trips. It is assumed in this assessment that 864 people regularly do this walk (daily). For sensitivity testing the tool was run for 432 people doing the walk twice a day, this produced a slightly lower health benefit of £11,539,000 to £20,933,000 (prevents 0.35 – 0.63 deaths per year)
- The amount of walking assessed is from a single point in time (because walking levels pre Garden Bridge are unknown)
- The distance walked was tested with two sensitivities of 1km and 2km. These two distances were picked because using Google maps a walk trip from Waterloo station to the south landing of the bridge is around 0.8km, the walk

[1] http://www.heatwalkingcycling.org/

across the bridge is 360m and the onward journey up the Kingsway to Holborn is 0.8km.

- The UK mortality rate is 434.10 deaths per 100,000 persons per year (crude rate, 2010)
- The value of a statistical life is £1.8m. This is from the TfL Business Case Development Value Appendix F. It is a DfT figure factored up to 2013 prices
- The time it will take for the 864 trips to shift to walking from bus use will be one year.
- The time period over which benefits are calculated is 30 years.
- The discount rate to apply to future benefits is 3.5%

Conclusions

Based on the WHO HEAT tool for walking, the Garden Bridge would prevent 0.37 to 0.70 deaths per year, giving a current value of total benefit of between £12,131,000 and £23,078,000 over the thirty years of the appraisal period.

The assumptions made are very conservative, assessing 864 trips out of a forecast daily total of 25,000 (under 5 per cent of daily trips) because these trips are the only ones that are known to be new, regular walk trips. Other trips may be displaced walk trips. Given the iconic nature and central location of the Garden Bridge in London it is highly likely that other, regular walk and cycle trips will be extended to divert via the Garden Bridge. It is also likely that new walk trips will be generated to visit the Bridge regularly by those working and living close to the Garden Bridge. However, lack of appropriate data to estimate these consequences mean that they have not been included in this assessment.

It is recommended that regular surveys are conducted of users of the Garden Bridge to determine levels of new walk trips and origins and destinations and that the HEAT tool is re-run using this data to assess the health benefits of the Bridge and inform future estimates for similar projects. This tool only assesses the health benefits of physical activity from regular walking, there are likely to be other health benefits which have not been included in this analysis.