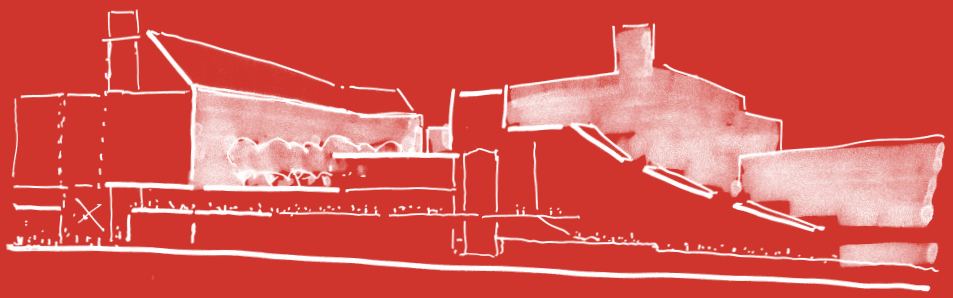
The British Library Extension
January 2022

Health Impact Assessment



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The British Library and SMBL Developments Ltd

British Library Extension

Health Impact Assessment

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This report takes into account the particular instructions and requirements of our client.

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1 Introduction

Ove Arup & Partners (Arup) has been commissioned to undertake a Health Impact Assessment (HIA) to accompany the planning application for the extension of the British Library (BL) (the 'Proposed Development') located in the London Borough of Camden (LB Camden). The works comprise the demolition of the British Library Centre for Conservation (BLCC) and the construction of a new building with space for library accommodation, commercial space designed to cater for Knowledge Quarter uses and below ground infrastructure for Crossrail 2 (CR2).

This HIA Report presents the findings of the HIA which aimed to identify the health and wellbeing effects of the Proposed Development on the population around the Site, and includes the following sections:

- Section 2 - A description of the Site and surroundings
- Section 3 - A description of the Proposed Development
- Section 4 - A description of the HIA methodology
- Section 5 - A description of the scope of the HIA, identifying the health determinants included in the assessment
- Section 6 - A profile of the local population using demographic, social and health data
- Section 7 - The HIA assessment, which includes the construction and operational effects
- Section 8 - Recommendations arising from the assessment for both construction and operational effects

2 Proposed development

2.1 Land use and design

The British Library Extension (BLE) ("the Proposed Development") would involve extending the northern aspect of the existing BL to provide library accommodation; commercial space designed to cater for knowledge quarter uses (including life sciences, cultural, scientific and heritage collections and data sciences); retail space; and the CR2 works at basement level.

The Proposed Development would provide a gross internal area (GIA) of up to approximately 97,000m^2. The new library accommodation and the Alan Turing Institute (ATI) and public circulation, including a public foyer, would be provided at approximately 10,000m^2 in addition to a replaced BLCC and BL tank farm and other library infrastructure. Approximately 76,000m^2 (GIA) would be provided for commercial space together with retail. Infrastructure related to CR2 would be provided at approximately 4,300m^2 (GIA), plus a shaft descending between basement levels 2-7. With respect to CR2, the Proposed Development would provide the main civils and structural elements of the Euston St Pancras Station eastern shaft and passenger subway tunnel. There will be adaptions to existing library operational areas, including the loading bay.

The Proposed Development would be 'car lite' with five wheelchair-accessible car parking spaces, four operational spaces for maintenance vehicles and a single minibus bay. The BLCC and the Story Garden are located within the Site. In order to facilitate the construction of the Proposed Development, the BLCC would be relocated, and a new community garden would be created within the Site.

3 Site and surroundings

3.1 Site

The site is located in the LB Camden and is approximately 4.1 acres in size. The site boundary is indicated by the solid red outline in Figure 1. The site currently comprises the following key elements:

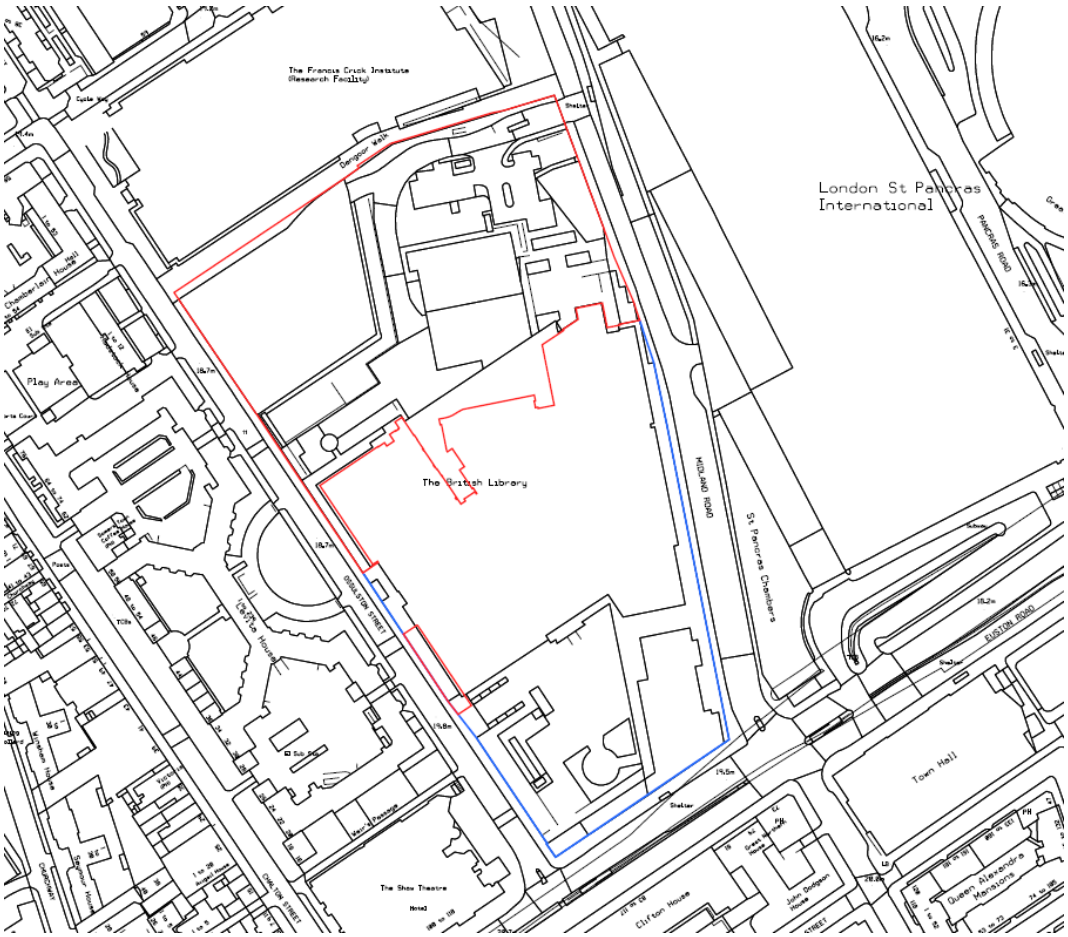
- The BLCC, which opened in 2007, provides a number of services related to the conservation and preservation of collections, including preventative conservation, conservation treatment, conservation science, internships and placements, and advice for the public and preservation guides. The BLCC also accommodates the National Sound Archives. The BLCC functions are integral to the operations of the BL and would be temporarily accommodated within the existing Library until the relocated BLCC facility is completed, whilst the National Sound Archive would remain in the existing building.
- The Story Garden, run by the educational charity Global Generation, is located on meanwhile space within the north-western part of the Site and provides a temporary urban food growing garden. It hosts community events and

workshops and offers advice and education to assist with growing flowers, fruit and vegetables. There would be a delay between the closure of the Story Garden and the completion of the new community garden. Discussions are ongoing so as to provide a continuation of the community service, by identifying projects within[i] the local area that could be undertaken during the construction period. In the meantime, the developer is looking at options to keep the Story Garden on site as long as possible to ensure continued presence.

- BL car park and staff cycle parking.

The majority of the existing BL complex sits outside the Site, directly to the south. The existing BL complex (other than the BLCC, which is within the Site) is indicated by the blue line on Figure 1.

Figure 1 shows the existing and Proposed Development.



3.2 Surroundings

The Site is directly bound to the north by the Francis Crick Institute (FCI) along Dangoor Walk, to the east by St Pancras International rail station on Midland Road, to the south by the existing BL complex and to the west by residential buildings in Somers Town facing onto Ossulston Street.

Beyond these, Regent High School and St Pancras Old Church lie to the north, Kings Cross Station to the east, and Euston Station to the west. The closest entrance to the Kings Cross St Pancras London Underground Station is 180m to the east of the Site, and Euston London Underground Station is 400m to the south-west of the Site.

The existing BL, piazza, boundary wall and railings are Grade I listed whilst the BLCC is excluded from the listing. In addition, there are eight listed structures within 150m of the Site with St Pancras Station and Former Midland Grand Hotel and Kings Cross Station both listed as Grade I, with the remaining six being Grade II. The entire BL site was cleared in the 1970s for the construction of the BL, having previously been a rail goods yard.

Euston Road (the A501) is the major road connection to the Site. Cycle Superhighway 6 passes along Midland Road, directly adjacent to the Site.

There are no Scheduled Monuments within 500m of the Site. Kings Cross Conservation Area is adjacent to the Site to the east though the Site itself is not within a conservation area. Bloomsbury Conservation Area is located to the south of the site.

The Site is located within an Air Quality Management Area (AQMA), designated for the whole of the LB Camden due to exceedances of air quality objectives for fine particulate matter (PM_{10}) and nitrogen dioxide (NO_2). The London Borough of Islington, 300m to the east, has also designated an AQMA for PM_{10} and NO_2. The Site is located just outside the current boundary of the London Ultra-Low Emission Zone (ULEZ) but will fall within the expanded ULEZ from 25 October 2021.

The GOV.UK flood map shows that the Site is located in Flood Zone 1. This equates to a low probability of flooding.

There are no nationally or internationally designated ecological sites within 1km of the Site. The closet statutory ecological designated site is the Camley Street Nature Park Local Nature Reserve which is located approximately 350m north of the Site.

The Site is located within the St Pancras and Somers Town ward of the LB Camden and is ranked the most deprived in the Borough.

Edith Neville Primary School, to the north, and Maria Fidelis Catholic School and Blossom Lower school, both to the west, are located within 250m of the Site. Somers Town Community Centre is located 300m to the north.

4 Methodology

4.1 Study area

The study area for the HIA has been defined by the geographic area over which impacts on health determinants are likely to occur. This varies between the health determinants – for example construction noise impacts would be local to the construction site, whereas impact on employment opportunities would be assessed at a wider level.

The community profile includes data at the borough level (LB Camden), and at the Lower Super Output Area (LSOA) level[1]. National level (England) data is included for comparison.

To compile a community profile, data was collected on the general population of LB Camden, as well as the LSOA data for the Site and its immediate surroundings. Figure **2** shows the LSOAs used for the study area for the assessment.

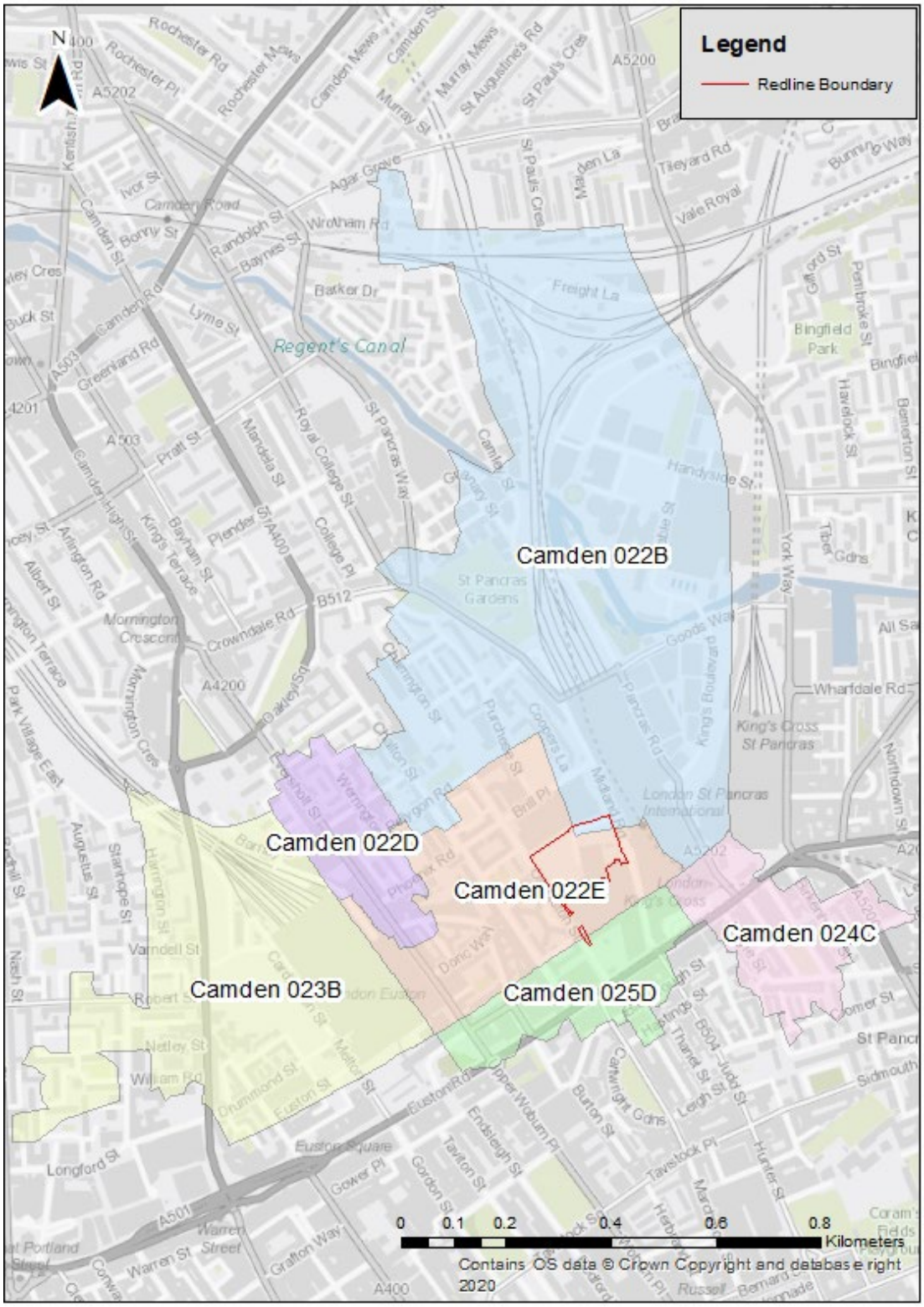
This assessment refers to a variety of geographical areas, including LB Camden (and beyond), the Site boundary for the project and LSOA levels.

To make these distinctions clear, the following specific terminology has been adopted throughout this report:

- The *Site boundary* to the redline boundary of the Proposed Development.
- The *development area* refers to Camden 022E and Camden 022B LSOAs in which the Proposed Development is located in.
- The *local community* refers to the LSOAs surrounding/adjacent to the development area including, Camden 022D, Camden 023B, Camden 024C, Camden 025D.
    - Note that as the Site boundary falls mainly within Camden 022E, this was the LSOA used for setting adjacent LSOAs to include within the local community study area.
- The *wider community* refers to the LB Camden and beyond.

[1] LSOA is the lowest geographic level for which the Census data is estimated.

Figure 2: LSOAs used to build the community profile for this assessment.



4.2 Overview of assessment process

The HIA has been based on the 'wider determinants of health'[2] model, recognising that health is determined by a wide range of environmental, social and economic factors or 'health determinants'. The assessment follows a bespoke methodology based on the NHS HUDU Rapid Health Impact Assessment Tool[3] and the IMPACT Urban Health Impact Assessment Methodology[4]. The HUDU tool is designed to assess the likely health impacts of development proposals and identifies those determinants of health which are likely to be influenced. The IMPACT methodology sets out a process for assessing health effects and improving health outcomes.

The process for completing the HIA has included the following stages:

- **Policy review:** a review of the relevant national and local policy context has been undertaken for the Proposed Development. This includes a review of the London Plan (2021)[5], Camden Local Plan (2017)[6], Camden Joint Strategic Needs Assessment (JSNA) (2019)[7] and Camden Planning Guidance: Planning for Health and Wellbeing (2021)[8].
- **Community profile:** a profile of the local community has been compiled using publicly available data. This focused on population demographics, socio-economic status and health indicators. Vulnerable groups prevalent within the population, who may be particularly susceptible to health effects, have been identified. Sources for this have included: The Camden JSNA (2019), Office of National Statistics (including the 2011 Census), Public Health England's Camden Health Profile and the 2019 Index of Multiple Deprivation.
- **Evidence review:** Publicly available literature has been reviewed to identify evidence linking health determinants (such as social or environmental conditions) with health outcomes. This is reported in Appendix A and forms the basis of the qualitative assessment of health effects of the Proposed Development.

[2] Public Health England. Wider Determinants of Health. Available from: https://fingertips.phe.org.uk/profile/wider-determinants
[3] London Healthy Urban Development Unit. (2019) HUDU Planning for Health – Rapid Health Impact Assessment Tool. Available from: https://www.healthyurbandevelopment.nhs.uk/wp-content/uploads/2019/10/HUDU-Rapid-HIA-Tool-October-2019.pdf
[4] Dreaves H, Pennington A, Scott-Samuel A (2015) Urban Health Impact Assessment methodology (UrHIA). Liverpool: IMPACT, University of Liverpool. www.healthimpactassessment.co.uk
[5] London Plan (2021). Available from: https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan/london-plan-2021
[6] Camden Local Plan (2017). Available from: https://www.camden.gov.uk/camden-local-plan1
[7] Camden Joint Strategic Needs Assessment. (2019). Available from: https://www.camden.gov.uk/joint-strategic-needs-assessment
[8] Camden Panning Guidance: Planning for Health and Wellbeing (2018). Available from: https://www.camden.gov.uk/documents/20142/4833316/CPG+Planning+for+health+and+wellbeing+March+2018.pdf/f84469ed-8fdd-67fb-bfea-c948f94dfcb4

- **Initial review and scope definition:** An initial review of the proposed scheme was undertaken using the HUDU checklist, to identify those health determinants that are relevant to the HIA. The review also identified any measures already incorporated into the design and related strategies codes, to improve the health performance of the Proposed Development.
- **Consultation:** Consultation was undertaken with the Public Health Lead of Camden Council. This was based on an email exchange in May 2021 where the scope of the assessment was agreed.
- **Assessment of health effects:** The assessment comprises two elements:
    - The Proposed Development was reviewed against the assessment criteria within the HUDU Rapid HIA Tool, and the relevant policies within the London Plan.
    - A qualitative assessment of the health effects arising from the construction and operation of the Proposed Development was undertaken. This identified likely health outcomes based on the evidence review, taking account of the magnitude of impact on the health determinant, the sensitivity of the affected population and the prevalence of vulnerable groups, as described in the community profile. Health effects were assessed using qualitative judgements, based on defined assessment criteria (see Section 4.3).
- **Recommendations:** Recommendations were made to improve the health outcomes of the Proposed Development. This includes measures to mitigate the adverse effects of the proposed scheme, and to enhance the potential beneficial effects on health. Measures already incorporated into the design and related strategies codes, to improve the health performance of the Proposed Development, will also be noted.

4.3 Assessment criteria

The assessment identifies ‘impacts’ on health determinants, and the resultant ‘effects’ on health, using the following assessment criteria:

- Magnitude of impact – scale and severity of change in the health determinant affected, defined as low, moderate or high magnitude;
- Duration of impact – temporary (short, medium, long term), permanent;
- Size of population exposed to the impact – individuals / local community / wider community;
- Sensitivity of population (to health effects) – low, moderate or high (based on information from the community profile);
- Nature of health effects –a description of the likely health outcomes (based on evidence review);
- Likelihood of health effect – definite, probable or possible.

Based on these criteria, health effects have been qualitatively assessed as negligible, minor, moderate or major, and beneficial or adverse.

4.4 Assumptions and limitations

- A Policy Review was undertaken for the BL, as part of the preparation of the Planning Statement. This reviewed the Proposed Development against the objectives of the London Plan (2021), Camden Local Plan (2017), Camden Planning Guidance: Planning for Health and Wellbeing (2018) and the Camden Joint Strategic Needs Assessment (2019). It is considered that the Proposed Development incorporates relevant objectives of the plans and as such this is not covered further in this assessment.
- Relevant information was drawn from architects and other sources including the draft Construction Management Plan (CMP), Social Value Framework (SVF), Sustainability Statement, and relevant assessment topics including air quality, noise and transport.
- The HIA is based on the findings of topic assessments included in the ES. Therefore, the assumptions and limitations relevant to those topics may also apply to the HIA.
- The assessment of health effects is qualitative, based on professional judgement and drawing on available qualitative and quantitative information.
- The community profile uses some data from the 2011 Census, which despite being ten years old at the time of this assessment, provides the most full and reliable dataset. 2021 Census data was not available at the time of writing, but it is not considered that the conclusions would change significantly over this time period.
- The BL will remain in situ and operational during construction. The BLCC will be relocated to a new facility within the Site boundary as part of the project. It is assumed that these will be able to provide a continuity of service during construction.

5 Scope of assessment

The HUDU Rapid Health Impact Assessment Tool[9] has been used as the basis for identifying the health determinants to be included and to undertake the assessment, as agreed with Camden Council's Public Health Strategist. The completed HUDU checklist is included in Appendix B. The scope of the assessment is summarised in Table 1 below.

Table 1 Scope of the assessment summarised

Health Determinants	Construction	Operation
Housing quality and design	x	x
Access to healthcare services and other infrastructure	x	x
Access to open space and nature	✓	✓
Air quality, noise and neighbourhood amenity	✓	x
Accessibility and active travel	x	✓
Crime reduction and community safety	x	✓
Access to healthy food	x	x
Access to work and training	✓	✓
Social cohesion and lifetime neighbourhoods	✓	✓
Minimising the use of resources	x	x
Climate change	x	x

5.1 Matters scoped out

The rationale for scoping out health determinants from the HUDU checklist at construction and operation are set out below. This rationale has been checked by Camden Council's Public Health Strategist.

[9] London Healthy Urban Development Unit. (2019) HUDU Planning for Health – Rapid Health Impact Assessment Tool. Available from: https://www.healthyurbandevelopment.nhs.uk/wp-content/uploads/2019/10/HUDU-Rapid-HIA-Tool-October-2019.pdf

5.1.1 Construction

- Housing Quality and Design: No demolition or construction of housing is proposed.
- Access to Healthcare Services and Other Social Infrastructure: No demolition or construction of new housing or provision of healthcare or community infrastructure is proposed.
- Accessibility and Active Travel: The impact on accessibility and active travel will be temporary and localised and will be managed through the draft CMP. For example, a pedestrian management plan will be implemented which would include the use of advance warning signage, signage, and temporary crossing points where temporary short-term closure of footpath may occur. The use of signage as noted on the logistics plans, trained/certified traffic marshalling to manage vehicle access/egress at both entrance and exit gates ensures that the existing cycle routes can be maintained. Therefore, this health determinant is not considered to give rise to adverse health effects.
- Crime Reduction and Community Safety: Construction impacts will be managed through the draft CMP. Measures including secure barrier fencing, lighting, and gatemen will be implemented. Therefore, it is considered that the presence of the Site will not result in an overall increase in crime or fear of crime. Safety concerns relating to construction traffic are assessed under the 'Air quality, noise and neighbourhood amenity' section.
- Access to Healthy Food: The Proposed Development is not likely to affect access to healthy food as the Site is located in central London with easy access to food around the Site and there will be no direct impact on food retail or loss of access to local shopping areas. The closure of the temporary Story Garden, including effects on access to healthy food is assessed under 'Access to open space and nature' section.
- Minimising the Use of Resources: The Proposed Development makes best use out of existing land, encourages recycling of construction, demolition, and excavation of waste, and incorporates sustainable construction techniques as conveyed in the HUDU Checklist (see Appendix B). As such, the Proposed Development is considered to perform well in terms of minimising the use of resources. Health effects associated with the use of resources occur at a regional/national level and no specific health effects are anticipated within the study area of the Proposed Development.
- Climate Change: see bullet point on Climate Change in Section 5.1.2.

5.1.2 Operation

- Housing Quality and Design: No demolition or construction of housing is proposed.
- Access to Healthcare Services and Other Social Infrastructure: No new housing or provision of healthcare or community infrastructure is proposed.
- Air quality, noise and neighbourhood amenity: The comprehensive air quality and noise assessments demonstrate no negative impact on air quality, noise or

vibration. The Proposed Development will be fully electric in normal operation, have on site renewable energy generation, and include rapid electric vehicle charging facilities for all car parking spaces embedding good practice measures for air quality. For further detail on the noise and air quality assessments please refer to Sections 12 and 5 of the ES, respectively.

- Access to healthy food: The Proposed Development is not likely to affect access to healthy food as the Site is located in central London with easy access to food and shops including supermarkets, pharmacies, and food outlets. The provision of healthy food options for staff and visitors is not reported on in detail at this stage, but catering contracts will be explored. The impact of the community learning garden on awareness and education around healthy food is assessed under the 'Access to open space and nature' section.
- Minimising the Use of Resources: The Proposed Development makes best use out of existing land, will establish recycling loop systems, aims to reduce material demand of new design, incorporates designs which favour re-use and recyclability, provides collection facilities, and incorporates sustainable design techniques as conveyed in the HUDU Checklist (see Appendix B). As such, the Proposed Development is considered to perform well in terms of minimising the use of resources. However, health effects associated with the use of resources occur at a regional/national level and no specific health effects are anticipated within the study area of the Proposed Development.
- Climate Change: Sustainability objectives for the Proposed Development include an all-electric building, a reduction of carbon emissions from renewable technologies, utilisation of low carbon materials, promotion of sustainable travel, incorporation of sustainable drainage and provision of a comfortable and resilient indoor and outdoor environment as conveyed in the HUDU Checklist (see Appendix B). As such, the Proposed Development is considered to perform well in terms of sustainability and climate change. Health effects associated with climate change occur at a regional/national level and no specific health effects are anticipated within the study area of the Proposed Development.

6 Community profile

A review of publicly available data has been undertaken to provide a profile of the demographic and health status of the population around the Site, located in the LB Camden. Refer back to Section 4.1 and Figure **2** for an explanation of the geographic areas that were used to compile this profile.

6.1 Population

Office for National Statistics (ONS) 2019 mid-year population estimates show that LB Camden has a population of 270,029 with a density of 12,393 persons per square kilometre[10]. Population projections show that by 2050, the population of LB Camden is likely to rise to rise to 304,798[11]. Table 2 sets out the population and densities for each LSOA within the local community. Camden 025D and Camden 022D have a greater population density when compared to the other LSOAs within the local community and when compared to average of LB Camden and London (12,393km^2 and 5,701km^2, respectively).

Table 2 Population and Population Density of the Study Area.

Location	Mid-2019 Population Estimates[12]	Population Density (people per sq km)[13]
Camden 022B	3,943	6,537
Camden 022D	1,797	28,122
Camden 022E	2,032	12,796
Camden 023B	1,786	6,586
Camden 025D	2,473	33,877
Camden 024C	1,583	20,140
Average	-	18,010
LB Camden	270,029	12,393

The population of LB Camden is young. It has a higher proportion of younger people aged 20-34 years compared to London and England[14]. In the development area and local community, 77% of individuals are under the age of 44, compared

[10] Office for National Statistics. Mid-2019 Population Estimates for Local Authorities. Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland
[11] Greater London Authority Population Projections for London. Available from: https://iao.blob.core.windows.net/publications/reports/f11c199d237c4cb79bca5427bfe8511d/E09000007.html
[12] Office for National Statistics. Mid-2019 Population Estimates for Lower Super Output Areas. Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/lowersuperoutputareapopulationdensity
[13] Office for National Statistics. Mid-2019 Population Densities for Lower Super Output Areas. Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/lowersuperoutputareapopulationdensity
[14] Camden Joint Strategic Needs Assessment. Data from 2019.

to the London average of 68%[15]. Further, just 12% of the population in LB Camden is over 65 years of age compared to a national proportion of 18.4%[16].

The development area is a diverse neighbourhood. According to the 2011 Census, 44% of the residents within the local community are White compared to London and England averages of 60% and 85%, respectively[17]. Asian/Asian British residents make up the largest minority group at 34%. The ethnic group profile of the local community is similar to the development area with Asian/Asian British residents making up the largest minority group at 31% compared to London and England averages of 19% and 8%, respectively.

6.2 Deprivation

The English Index of Multiple Deprivation (IMD) 2019[18] measures relative levels of deprivation at LSOA level and is made up of seven 'domains' of deprivation (Income; Employment deprivation; Health deprivation and disability; Education, skills and training deprivation; Crime; Barriers to housing and services; and living environment). Table 3 sets out the overall deprivation levels for each LSOA.

The majority of LSOAs in the study area fall within the 30% most deprived LSOAs in England. The development area falls within the 20% most deprived LSOAs. Camden 025D located directly south of the Proposed Development is the least deprived area within the local community.

Table 3 Overall deprivation in the LSOAs relevant to geographical scope of the Project, IMD 2019.

LSOA Name	IMD Decile (where 1 is most deprived 10% of LSOAs)
Camden 022B	2
Camden 022D	3
Camden 022E	2
Camden 023B	3
Camden 025D	6
Camden 024C	2

The level of unemployment in LB Camden is 4.1% which is similar to the London (4.9%) and Great Britain (4.2%) levels[19]. Economic activity data within LB Camden shows that 72.9% of residents are economically active, which is lower than the London and Great Britain levels of 79.1% and 79.0%, respectively[20]. The proportion of children under 16 years of age in low income families is decreasing in the Borough; however, it is still higher than the London and England

[15] Office for National Statistics. Mid-2019 Population Estimates for Lower Layer Super Output Areas in England and Wales by Single Year of Age and Sex.
[16] Public Health England (PHE). Camden Local Authority Health Profile (Data from 2019). Available from: https;//fingertips.phe.org.uk/profile/health-profiles.
[17] Nomis (ONS) Census 2011: Ethnic group (KS201EW)
[18] Office for National Statistics. English Index of Multiple Deprivation 2019. Available from: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019
[19] Nomis (ONS) Labour Market Profile for Camden. Available from: https://www.nomisweb.co.uk/reports/lmp/la/1946157246/report.aspx?town=camden
[20] Nomis (ONS) Census 2011: Economic Activity

averages[21]. The development area (Camden 022B & 022E) ranks amongst the top 20% most deprived LSOAs in the country in terms of income and 30% most deprived in terms of employment[22]. According to the 2011 Census, 29% of residents within the development area have attained a post-secondary qualification which is significantly lower than the LB Camden and London levels of 50.5% and 37.7%, respectively[23]. The levels are lower within the local community, where 22.6% of residents have attained a post-secondary qualification.

Occupation data shows that a high proportion of people in the development area are employed in elementary occupations at 14.9%. This is similar to the local community proportion of 14.7% but higher than the proportion in LB Camden and London population (6.3% and 9.5%, respectively)[24]. The local community lies within an area that is ranked amongst top 30-50% most deprived in the country for education, skills, and training[25,26].

The Public Health England Profile for LB Camden shows that the rate of violent crime is higher than the rate in London (24.9 per 1000 people) but lower than the rate in England (29.5 per 1000 people), with 25.6 violence offences per 1000 people in 2019/2020[27]. This is not in line with the crime rates at a local level, as the Proposed Development falls within Camden 022B and Camden 022E LSOAs, which are ranked as the top 10% and 20% most deprived areas in the country in terms of crime. The rate of sexual offences is on the rise in LB Camden, with the borough observing a 94% increase between 2010/11 and 2018/19[28].

6.3 Health and wellbeing

The majority of residents in LB Camden report good or very good general health[29]. This is similar to the average reported by residents of London and England, where 85% residents self-report good or very good health.

The Public Health England profile[30] for LB Camden shows that LB Camden performs better than the English average on some key behavioural indicators and similar to the English average for most determinants of health indicators. Some key behavioural indicators include:

- The proportion of physically active adults was 65.8% compared with London's 65.2% and England's 66.4% in 2019/20;
- The proportion of adults (aged 18+, 2019/20) classified as overweight or obese is significantly lower than London's and England's average. 48.2% of

[21] Public Health England (PHE), Camden Local Authority Health Profile – Children in low income families (under 16). Available from: https://fingertips.phe.org.uk/profile/health-profiles/data#page/1/gid/1938132701/pat/6/par/E12000007/ati/202/are/E09000007/cid/4/tbm/1
[22] Office for National Statistics. English Index of Multiple Deprivation 2019. Available from: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019
[23] Nomis (ONS) Census 2011: Highest Level of Qualification Attained.
[24] Nomis (ONS) Census 2011: Occupation (KS608EW to KS610EW)
[25] Office for National Statistics. English Index of Multiple Deprivation 2019. Available from: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019
[26] With the exception of Camden 025D which is in the top 50% least deprived.
[27] Public Health England (PHE), Camden Local Authority Health Profile
[28] Camden Joint Strategic Needs Assessment
[29] Nomis (ONS) Census 2011: General Health
[30] Public Health England (PHE), Camden Local Authority Health Profile

adults in LB Camden have excess weight, compared to 55.7% of adults in in London and 62.8% of adults in England;

- The proportion (three-year average from 2015/16 – 2017/18) of obese children aged 10-11 years is similar to the London and England average (22.1% compared with London's and England's value of 23.3% and 20.0%, respectively);
- The 2019 smoking prevalence in adults (aged 18+) is 12% which is similar to the London (12.9%) and England (13.9%) levels; and
- The proportion of statutory homelessness (based on 2017/18 data) in LB Camden is lower than the English average; 0.8 people per 1000 are homeless in LB Camden, relative to 4.2 per 1000 and 2.4 per 1000 in London and England, respectively.

LB Camden has a higher rate of diabetes diagnoses than the average for England. According to the 2018 Camden Public Health Profile data, the rate of diabetes diagnoses for people over the age of 17 is significantly higher in LB Camden than in London and England[31].

LB Camden has a high prevalence of people living with serious mental health conditions. It is in the top 10 London boroughs for proportion of working age people claiming out of work benefits and those claiming benefits due to mental health[32]. Furthermore, rate of people killed and seriously injured on the roads is significantly higher than the England value, (50.9 (per 100,000 people) compared with London 39.5 (per 100,000 people) and England 42.6 (per 100,000 people))[33].

The health domain of the IMD expresses the health deprivation and disability of a community, measured by the level of possible risk posed by poor physical or mental health and its contribution to early death or reduction in quality of life. The IMD health profile shows that Camden 022B and Camden 022E (the LSOAs within the development area) rank amongst the 30% and 50% most deprived LSOAs in the country, respectively, in terms of health deprivation and disability[34]. This is broadly in line with the IMD health profile of the LSOAs surrounding the development area which range from 30-40% most deprived in the country, with the exception of Camden 025D which ranks amongst the 10% least deprived in the country. The proportion of residents within the local community with a long-term health problem or disability that limits their day to day activities is on par with that for London (14.2%) but better than that for England (17.6%), with approximately 14.4% of people falling under this category[35].

Life expectancy at birth in LB Camden is 87.1 years for females and 83.3 years for males which is above the London (84.7 years for females and 80.9 years for males) and England average (83.4 years for females and 79.8 years for males). However, men and women from the most deprived areas have a life expectancy of 12.9 and 8.4 years less, respectively, than those from the least deprived areas

[31] Public Health England (PHE), Camden Local Authority Health Profile
[32] Camden Joint Strategic Needs Assessment
[33] Based on 2016-18 data from Public Health England (PHE), Camden Local Authority Health Profile
[34] Office for National Statistics. English Index of Multiple Deprivation 2019. Available from: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019
[35] Public Health England (PHE), Camden Local Authority Health Profile

suggesting inequalities in life expectancy between the most and least deprived. The average healthy life expectancy is similar to the London and England levels, and LB Camden residents spend an average of last 20 years in poor health according to the Camden Joint Strategic Needs Assessment[36].

6.4 Living environment and access to nature

The IMD living environment profile shows that Camden 022B and Camden 022E (The LSOAs within the development area) rank amongst 30% and 10% most deprived LSOAs in the country, respectively in terms of quality of housing, pollution and traffic accidents. The other LSOAs within the local community range from top 10%-30% most deprived neighbourhoods in the country in terms of the IMD living environment domain suggesting that the area is highly deprived in terms of living environment[37].

The Camden Open Space, Sport and Recreation Study (2014)[38] shows that the Proposed Development is located in an area that has a small deficiency in all public parks[39] as classified by the parks hierarchy. The study suggested that the addition of one small pocket park (with a total area of 2ha) would address the deficiencies in park provision. No deficiency in children's play provision, natural green space, or sport hall provision was identified; however, a deficiency in swimming pool and allotment provision was found.

An analysis of public open space[40] in the study area identified the following open spaces:

- Brill Place - ~200 meters (3-minute walk);
- The BL Piazza – ~100 meters (3-minute walk);
- Chalton Street Open Space – Plot 10 Adventure Playground and Polygon Road Outdoor Gym - ~300 meters (3-minute walk);
- St Pancras Gardens - ~600 meters (8-minute walk);
- Regent's Canal – ~800 meters (11- minute walk);
- Camley Street Natural Park – ~700 meters (9-minute walk); and
- Goldington Crescent Gardens - ~600 meters (8-minute walk).

The Camden Local Plan (2017)[41] states that current and future projects within Somers Town should be designed to deliver against a few agreed priorities, with one of those being open space. Further, Policy A2 of the Local Plan (2017) states

[36] Camden Joint Strategic Needs Assessment
[37] Office for National Statistics. English Index of Multiple Deprivation 2019. Available from: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019
[38] Atkins. Camden Open Space, Sport and Recreation Study (2014). Available from: https://www.camden.gov.uk/documents/20142/15817034/CD2.5+Open+Space+Sport+Recreation+Study+2014.pdf/4ce694bd-f292-b73f-d061-d0150ea3eb5a
[39] This includes: Metropolitan Parks, District Parks, Local Parks, Small Local Parks, Pocket Parks and Linear Open Spaces
[40] Planning Data Map. Available from: https://maps.london.gov.uk/planning/
[41] Camden Local Plan (2017). Available from: https://www.camden.gov.uk/documents/20142/4820180/Local+Plan.pdf/ce6e992a-91f9-3a60-720c-70290fab78a6

that the Council will protect, maintain and enhance LB Camden's parks, open spaces and green corridors and seek to tackle deficiencies and meet increased demand for open space.

6.5 Vulnerable groups

Based on the characteristics of the community described in Sections 6.1 - 6.4, Table 4 summarises the disadvantaged and/or vulnerable groups present. It should be noted that the most disadvantaged and/or vulnerable groups are those that exhibit a number of characteristics, for example, children living in poverty. The groups that have been identified as applicable to this assessment are those that are identified as having the potential to be differentially affected by the Proposed Development.

Table 4 Vulnerable groups and subgroups

Vulnerable groups	Vulnerable sub-groups	Applicable? (Y/N)
Age related groups	Children and young people	Y
	Older people	Y
Income related groups	People on low income	Y
	Economically inactive	Y
	Unemployed	Y
Groups who suffer discrimination or other social disadvantage	People with physical or learning disabilities/difficulties	Y
	Refugee groups	N
	People seeking asylum	N
	Single parent families	N
	Religious groups	N
	Lesbian and gay and transgender people	N
	Black and minority ethnic groups	Y
Geographical groups	People living in areas known to exhibit poor economic and/or health indicators	Y

7 Assessment

7.1 Construction effects

Access to open space and nature

Evidence shows that access to open space and nature, including quality, proximity and size, positively influences physical and mental health outcomes (refer to Appendix A for evidence).

The development area is located within an area of small deficiency[42] in terms of access to all public parks as classified by the park hierarchy. Camden Local Plan Policy A2 states that sites awaiting development can make short term contributions to open space provision and this is strongly supported by the Council. Within the Site boundary, the Story Garden is a meanwhile use[43] temporary urban food growing community garden on the Site of the Proposed Development. Global Generation, who manage the garden, identify it as "*a green oasis which brings the local community together over food growing, communal meals, shared stories and creative activities*[44]*"*.

The construction of the Proposed Development will see the Story Garden relocate to its permanent location in Islington, which is considered too far for the local community to access. Local young people, workers and families in Kings Cross who primarily use this garden, and who rely on it as a resource for access to nature, social interaction, mental wellbeing, will be impacted by its relocation. People with reduced mobility will also be affected, as they would be less able to access alternative parks and open spaces.

The relocation of the Story Garden may reduce opportunities for education and awareness about healthy food. However, a community gardener has been hired to work with local residents to create their own gardens and may help mitigate some of this impact. The applicant is also having ongoing discussions to identify projects within the local area that could be undertaken during the construction period to provide access to open and natural space in the absence of the Story Garden.

The nearest alternative public open spaces include the Chalton Street Open Space which includes the Plot 10 Adventure Playground and Polygon Road Outdoor Gym located north east of the Site, an approximate 4-minute walk from the Site. Additionally, the BL Piazza/Forecourt located on the existing BL land ~300m south of the Proposed Development, an approximate 3-minute walk from the Site will remain unaffected during construction.

[42] Atkins. Camden Open Space, Sport and Recreation Study (2014). Available from: https://www.camden.gov.uk/documents/20142/15817034/CD2.5+Open+Space+Sport+Recreation+Study+2014.pdf/4ce694bd-f292-b73f-d061-d0150ea3eb5a
[43] Meanwhile use refers to the short-term use of the temporary land before the Site is developed into its intended use.
[44] Global Generation. Available online at: https://www.globalgeneration.org.uk/about-us

Although the Story Garden was originally a meanwhile use and intended to be temporary, the effect on health is the same therefore, the magnitude of impact is evaluated as medium. The duration is evaluated as temporary as new open space will be re-introduced during operation. The health effect is assessed as **negative, temporary, moderate.**

Air quality, noise and neighbourhood amenity

The construction of the Proposed Development will impact on the neighbourhood amenity for residents on Ossulston Street to the west of the Site, users of the FCI to the north of the Site and the local area through increased noise, dust, changes in visual amenity and construction traffic.

Air Quality

Evidence has shown that short- and long-term exposure to air pollution is associated with various health outcomes (refer to Appendix A for evidence). The pollutants of key concern for health are particulate matter ($PM_{2.5}$ and PM_{10}) and nitrogen dioxide (NO_2).

The air quality assessment of $PM_{2.5}$, PM_{10} and NO_2 concluded that there is likely to be negligible air quality impact from the dust-generating activities and construction vehicle emissions on site for sensitive receptors with the appropriate mitigation measures implemented, as specified in the draft CMP. It is therefore not expected that air pollution arising from this development will negatively impact the health of residents.

Nevertheless, it is likely that negative perceptions of air quality will generate concerns about the health effects of construction emissions, particularly with regard to children's health and people with existing respiratory conditions, and this will contribute to the perception of reduced neighbourhood amenity.

Considering the assessment of the ES and the planned mitigation, the magnitude of the impact is evaluated as very low and the duration temporary. The health effect is assessed as **negligible.**

Noise

Evidence shows that environmental noise has the potential to cause annoyance, stress and sleep disturbance, which in turn could impact on wellbeing (Appendix A).

A comprehensive noise assessment found a significant negative impact on noise from construction activities for residents on Ossulston Street and St Pancras Hotel. No significant impact on noise from construction traffic was found. Discussions are ongoing to introduce localised enclosures and innovative hoarding to limit noise from construction activities in addition to measures set out in the draft CMP to mitigate impacts as far as practicable.

A comprehensive vibration assessment demonstrated no negative impact on vibration following the adoption of identified mitigation measures.

The magnitude of the impact is evaluated as medium and the duration temporary. The health effect is assessed as **negative, temporary, moderate.**

Neighbourhood Amenity

Evidence shows that neighbourhood amenity can have an impact on mental wellbeing (Appendix A). Numerous factors contribute to the amenity value of the local environment including air quality, noise, traffic, and visual amenity.

The visual impact of construction sites will be mitigated by the use of hoarding and by general good housekeeping measures set out in the draft CMP. However, the loss of the Story Garden during construction from the surrounding areas will adversely impact the visual amenity of the local area. Further, the visual assessment identified significant moderate to major effects on close views which will be adverse in nature and negligible to moderate and neutral to adverse in nature on more distant views.

The increased presence of traffic (including HGVs) on Midland Road and Ossulston Street during peak times may contribute to congestion. During the construction period, an average of 27 HGV movements are expected per day, with some period of higher frequencies. It is also likely to give rise to concerns about road safety, particularly for children and older people, which may contribute to perceptions of reduced neighbourhood amenity. This may deter pedestrian/cyclist movements and may influence health and wellbeing by curtailing active travel and causing stress and anxiety.

Considering neighbourhood amenity during construction, the magnitude of the impact is evaluated as low/medium and the duration temporary. The health effect is assessed as **negative, temporary, minor.**

Access to work and training

Evidence shows that there is a strong positive correlation between good employment, income levels, and social and psychological wellbeing. Employment and training accrue a range of health benefits, improving life expectancy, and enabling healthier lifestyle choices (refer to Appendix A for evidence).

The level of unemployment in LB Camden is similar to the London and England levels. However, the development area and local community is deprived in terms of income, employment, education and skills, and a relatively small proportion of individuals have received post-secondary qualifications, as depicted in the Community Profile (Section 6.2). Further, occupation data shows that a relatively high proportion of people in the development area and local community are employed in elementary occupations.

The construction phase has the potential to offer temporary work for people in skilled and unskilled occupations, as well as the potential for the implementation of apprenticeship programs for the youth and young adults. The provision of jobs, work placement opportunities and apprenticeships during construction will further help to reduce unemployment levels and provide employment opportunities for individuals in the local area. To ensure that the opportunities are targeted at the

local community, all opportunities will be targeted at LB Camden residents through local procurement arrangements such as via the Kings Cross Construction Skills Centre, The Somers Town Job Hub and Good Work Camden, before marketing more widely. Additionally, the applicant aims to work with local partners and organisations to ensure that pre-employment support is given to local job seekers and young people, through forms of workshops, training etc.

The presence of construction in the local area could influence health and wellbeing in the local population. However, considered across the wider community, the magnitude of the impact is evaluated as low and the duration as temporary. The health effect has been assessed as **positive, temporary, and minor.**

Social cohesion and lifetime neighbourhoods

Social cohesion is defined as the quality of social relationships and existence of trust, mutual obligations and respect in communities or wider society, and is linked to levels of inequality or exclusion within a given community. Evidence shows that the physical environment can directly influence social cohesion (refer to Appendix A for evidence).

The construction of the Proposed Development will require the Story Garden to relocate to Islington, which is considered too far for local community to access. Local young people, businesses and families in Kings Cross who primarily use this garden, and who rely on it as a resource for social interaction, will be particularly impacted by its relocation. The closure of the Story Garden may affect social cohesion as the benefits from participation in the community activities will be less accessible to the Somers Town community. However, the design of the new community learning garden[45] during construction will be undertaken with engagement from the local community, providing opportunities for social interaction and social cohesion. Further, the applicant is having ongoing discussion to identify projects within the local area that could be undertaken during the construction period to provide a natural space where the community can get together and improve social cohesion in the absence of the Story Garden. The Proposed Development also aims to set up a Neighbours' Advisory Panel (NAP) to help shape community project ideas and engage the local community during the construction phase.

Although the Story Garden was temporary, its closure may affect access to community activities during construction of the Proposed Development and therefore, the magnitude of the impact has been evaluated as medium. The duration has been evaluated as temporary because a new community garden will be introduced as part of the Proposed Development once completed. This health effect has been assessed as **negative, temporary, and moderate.**

[45] Design of the new community learning garden will be done in collaboration with Global Generation – an educational charity

7.2 Operational effects

Access to open space and nature

Evidence shows that access to open space and nature, including quality, proximity and size, positively influences physical and mental health outcomes (Appendix A).

Please note that the loss of the Story Garden in the meanwhile use area has been assessed under construction effects. The Proposed Development includes creation of new sequence of public realm between Somers Town and St. Pancreas including improvements to the public realm along the frontage of Ossulston Street, Midland Road and Dangoor Walk. Additionally, the Proposed Development will create a new civic entrance space on Midland Road and include landscaping that increases habitat connectivity and the overall biodiversity of the Site post- construction.

The Proposed Development will provide publicly accessible areas, including a community learning garden (250 m^2) and a learning open reading room. The community learning garden will be co-designed with the local community. It will act as a hub for community led satellite greening and growing projects in Somers Town. This will positively impact access to healthy food for the local community as it will provide small-scale community initiatives facilitating local food production. The learning open reading room will be a dedicated open space for families to come to, children to play or read and events to happen for the local community. The facilitation of these publicly accessible open spaces within the Proposed Development will offer physical and mental health benefits to residents as they will have access to green space and an area for social interaction and gentle physical activity.

The Proposed Development is in an area that has a small deficiency to parks as identified in the Camden Open Space, Sport and Recreation Study (2014)[46] so the introduction of a new permanent open space and improvement to public realm will be beneficial in improving access to green space.

The magnitude of the impact has been evaluated as medium and the duration permanent. This health effect has been assessed as **positive, permanent, and minor/moderate.**

Accessibility and active travel

Evidence shows that accessibility for local residents to community facilities and public services has a direct positive effect on human health. Further, physical activity associated with active travel brings about many positive health effects (refer to Appendix A for evidence). Various design features outlined in the Transport Assessment will improve accessibility and active travel.

[46] Atkins. Camden Open Space, Sport and Recreation Study (2014). Available from: https://www.camden.gov.uk/documents/20142/15817034/CD2.5+Open+Space+Sport+Recreation+Study+2014.pdf/4ce694bd-f292-b73f-d061-d0150ea3eb5a

The design proposal fosters active travel by being car-free (except 10 car parking spaces for servicing, staff, and disabled users). It also restricts vehicular movements to operational needs only (i.e. deliveries and servicing), accommodated within the curtilage of the Proposed Development and off the public highway.

The Proposed Development will provide high quality cycle parking facilities to improve active travel. Access to the cycle store will be facilitated via a dedicated ramp from Ossulston Street leading to the basement. A total of 172 short stay cycle parking spaces will be provided of which 122 will be on site and 50 in the local area which will be funded through the S106 agreement. Further, 1112 long stay cycle parking spaces will be provided. Facilities for cyclists will also be provided including showers, lockers, and drying facilities.

Greater permeability and safe pedestrian routes through the Proposed Development will increase walkability in the area, including creation of new east-west and north-south routes across the Site. The Proposed Development will provide walking access to the buildings on-site from multiple access points on Midland Road and Ossulston Street. All the access points will be easily visible and step free. Further, creation of a new sequence of connected public realm improvements between Somers Town and St. Pancras will make the local neighbourhood more walkable. The Proposed Development will incorporate appropriate signage to direct people to external walking and cycling routes. The Proposed Development is well served by bus services with six bus stops and a variety of underground, overground, and national rail services.

The Proposed Development will ensure that all spaces in the Proposed Development are safe for use by all members of the community. This includes design measures such as level/gently grated routes, stepped and step free access to cycle storage, provision of cycle storage for accessible and non-standard cycles, evacuation lifts for people who cannot use stairs, level access to Midland Road entrance and raised ground to reduce gradient to Ossulston Street. Relaxed openings and audio-description tours will also encourage use of the library by people with accessibility barriers.

All of the measures/ aspects mentioned in this section will help increase the accessibility, active travel and public transport modes and encourage people to exercise more when travelling to and from the Site, thereby impacting health and wellbeing.

Considered across the local community, the magnitude of impact is evaluated as moderate and the duration as permanent. The health effect has been assessed as **positive, permanent, and minor/moderate.**

Crime reduction and community safety

Evidence shows that community safety is crucial in determining direct and indirect health and wellbeing outcomes (refer to Appendix A for evidence).

The design of the Proposed Development, including multi-use public spaces, will be guided by Counter-Terrorism Security Advisors (CTSAs), Secure by Design

Principles and other best practice measures within the security industry to create a safe and secure environment for staff and visitors whilst reducing the opportunity for crime. This will include CCTV, improved wayfinding, signage and connections and Crime Prevention Through Environmental Design (CPTED) principles such as landscape design and features. The public realm will incorporate a number of design features that reduce the risk of crime and hostile vehicles, including planters, benches and overt bollards to create a protective envelope.

The design is being developed in accordance with the BL security policy and specialist advice covering both criminal and terrorist related activity. The design will incorporate measures that allow for natural surveillance and support an open and welcoming space that looks and feels safe and secure. Improved permeability of the library, improved lighting surrounding the new extension and widening of Dangoor Walk will ensure the area does not become a dark and enclosed pathway.

It is considered that overall, there will be no adverse effect on wellbeing associated with increased crime or fear of crime within the local community. The magnitude of impact is evaluated as very low and the duration as permanent. The health effect has been assessed as **negligible.**

Access to work and training

Evidence has shown that maintaining high levels of employment has positive effects on health and education is beneficial for people's wellbeing and mental health (refer to Appendix A for evidence).

The Proposed Development will create new jobs, with around 3000 estimated in the commercial and retail spaces. It is assumed that majority of these jobs will be professional occupations and only a small proportion will be accessible for elementary and customer service occupations. As the local community is 30-50% most deprived in the country for education, skills, and training, some job description and requirements may not meet the skill profile of the local community. There is a commitment to proactively promote all roles, below degree level in the local community ahead of wider marketing by collaborating with Somers Town Jobs Hub, Good Work Camden and/or Kings Cross Construction Skills Centre. Activities such as CV workshops, Adult Learning Programmes, accessible job descriptions and awareness raising activities around the skills and opportunities in the business sectors in the building will be provided. This will aim to reduce barriers and facilitate local people being able to apply for and attain jobs in the Proposed Development.

Work placement, apprenticeship and training opportunities will also be introduced during the operation stage of the Proposed Development. The BL has committed to providing employment opportunities through the Library Business and Intellectual Property Centre (BIPC) alumni mentoring and work experience scheme. It has also committed to ringfencing 75% of student work experience opportunities for local schools and colleges. There is an objective to increase engagement with local schools from 47% to 100% through as a result of increased Learning Centre space within the Proposed Development. Subject to ongoing development discussions, potential opportunities for engagement include work

experience, 1-2-1 mentoring, career talks and workplace visits. This will aim to provide work and training opportunities for younger individuals in the local community.

The Proposed Development will support start-ups, microbusiness, and small medium enterprises by providing free Wi-Fi and study desks and affordable, subsidised incubator space within the library for socially responsible and creative micro, small and medium enterprises (MSMEs). It also aims to host an annual business start-up day in the BIPC, free of charge to local residents. BIPC workshop rooms will be available in the evening and weekends to established community partners at no cost.

The Proposed Development will provide a homework group for young people who do not have access to suitable study space or technology at home ensuring access for all members of the community.

Although detailed design of the office and library space has not been completed at this stage, it is intended that specific measures will be implemented, at future stages, to maximise the health, wellbeing, and productivity of the Proposed Development's occupants.

These measures could benefit the population health and wellbeing. Considered across the local population, the magnitude of this impact is evaluated as medium and the duration permanent. The health effect has been assessed a **positive, permanent, moderate.**

Social cohesion and lifetime neighbourhoods

Social cohesion is defined as the quality of social relationships and existence of trust, mutual obligations and respect in communities or wider society, and is linked to levels of inequality or exclusion within a given community. Evidence shows that the physical environment can directly influence social cohesion (refer to Appendix A for evidence). The Proposed Development includes a mix of uses and a range of community facilities which will all enable social connection and enhance cohesive communities.

The Proposed Development aims to create an engaging and welcoming public realm which fits into the existing area and provides opportunities for the local community to engage and socialize. This includes the provision of a community learning garden and learning open reading room which will be an open space providing a space for social interaction. Further, a new Learning Centre will be available for community groups to book, free of charge. These spaces, along with other components of the Proposed Development, will hold numerous community activities, programmes, tours and school visits to improve social cohesion and lifetime neighbourhoods.

Local Community Ambassadors will be embedded within the BL community engagement team to inform community programme and support communication. This will promote engagement of the local community in programming of events and exhibitions and contribute to the creation of collaborative projects and community-based services. The SVF for the Proposed Development lists several

volunteer and community partner sectors, such as the Camden Spark network and Somers Town History Club. This partnership will ensure opportunities for the voluntary and community sectors are present and the Proposed Development aims to include them in the supply chain.

These measures will impact social cohesion and benefit the health and wellbeing of the local community. The magnitude of impact has been evaluated as medium and the duration permanent. The health effect has been assessed as **positive, permanent, and minor.**

8 Cumulative effects

Cumulative impacts during construction and operation have been considered as set out in the Camden Planning Guidance: Planning for Health and Wellbeing (2018)[47].

Committed developments in the study area plus any outside this area that are picked up by relevant topics in the Environmental Statement, including noise, visual impacts or air quality, were considered for the cumulative impact assessment.

Construction

At this stage the there are no other committed developments in the area and timescales that would require consideration.

Operation

The visual cumulative effect assessment found a moderate to major beneficial effect on views and townscape character areas with the following committed developments: Central Somers Town (view 2 and 3), Kings Cross (view 1, 2 and 3), London Bridge (view 1,2,3, and 4), City of London (view 4), Canada Water and Convoys Wharf (view 4), and Old Kent Road (view 4) opportunity area. This will positively impact the visual amenity of the study area and therefore positively impact on the neighbourhood amenity. The magnitude of the cumulative effect is evaluated as major and the duration permanent. The health effect has been assessed as **positive, permanent, moderate.**

At this stage the there are no other committed developments in the area and timescales that would require consideration.

[47] Camden Panning Guidance: Planning for Health and Wellbeing (2018). Available from: https://www.camden.gov.uk/documents/20142/4833316/CPG+Planning+for+health+and+wellbeing+March+2018.pdf/f84469ed-8fdd-67fb-bfea-c948f94dfcb4

9 Summary of health assessment

Table 5 summarises the health assessment of the Proposed Development.

Table 5 Summary of the health assessment by health determinant during construction and operation.

Health determinant	Impact on determinant at population level
Construction	
Access to open space and nature	Negative, Temporary, Moderate
Air quality (AQ), noise and neighbourhood amenity (NA)	**AQ:** Negligible **Noise**: Negative, Temporary, Moderate **NA**: Negative, Temporary, Minor
Access to work and training	Positive, Temporary, Minor
Social cohesion and lifetime neighbourhoods	Negative, Temporary, Moderate
Operation	
Access to open space and nature	Positive, Permanent, Minor/Moderate
Accessibility and active travel	Positive, Permanent, Minor/Moderate
Crime reduction and community safety	Negligible
Access to work and training	Positive, Permanent, Moderate
Social cohesion and lifetime neighbourhoods	Positive, Permanent, Minor

10 Recommendations

10.1 Construction

- Before the relocation of the Story Garden for construction of the Proposed Development occurs, it is recommended that alternative options for the temporary and permanent provision of open space and community garden are identified, preferably in communication with the local community. Alternative options should be well communicated with the local community including where they can be found and how they can be accessed. This will improve access to open space and nature and social cohesion.
- It is recommended that mitigation measures currently under discussion to minimise impact from noise and vibration should be confirmed as soon as possible to ensure that appropriate measures are in place once construction begins and impacts are mitigated as far as practicable.
- It is recommended that the NAP be established, as planned, to represent community interests during construction. Additionally, the BL community engagement team should continue developing relationships with the local community to help co-curate the Proposed Development. This will ensure that the Proposed Development incorporates and represents the views of the local community and will allow the local community to feel more ownership of the space.
- It is recommended that public realm and building design aspirations currently under discussion are developed by engaging with key stakeholders during the detailed design and construction phase. This should include staff and groups such as children, people with existing health conditions and people on low income as identified in the baseline scenario. This will contribute to the maximisation of positive impacts for vulnerable groups.

10.2 Operation

- Sustainable design aspirations include targeting BREEAM “Outstanding”, WELL Building Institute Standard “Gold” and Wired Certified “Platinum” rating throughout the Proposed Development. It is recommended that these initiatives are further explored and implemented, if practicable. Health determinants such as access to green space should be prioritised when achieving these ratings to ensure that these spaces are climate resilient (i.e. they should include shade).

- The inclusion of a community garden and an open learning room will offer physical and mental health benefits to local residents as they will have access to green space and an area for social interaction and gentle physical activity. To ensure that the space is used by the local community, it is recommended that ways to promote and incentivise the use of these areas are explored. For example, events and/or exhibitions targeted at local people or are designed and hosted in collaboration with the local

community being explored are implemented. Such measures should be implemented throughout all publicly accessible components of the Proposed Development to maximise its use by the local community and ensure the community feels ownership of the new space.

- It is recommended that the current aspiration for most of the ground floor for the Site extension to be accessible both externally and internally to the public is implemented. The local community should be considered when use of and accessibility to the space is designed. This will improve accessibility to the space and attract passers-by.
- The discussions relating to opportunities for young people are currently ongoing. It is recommended that opportunities relating to work experience, mentoring, career talks, and workplace visits are further developed and implemented in collaboration with local schools to deliver against Camden STEAM priorities, as currently planned. This will improve present and future training and employment opportunities for people in the local community.

Appendix A

Evidence Review

A1 Access to open space and nature

Numerous studies have found links between mental and physical health and access to open space and nature. The literature review of peer review papers undertaken by the Forestry Commission[48] found that the 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.'

The review suggests 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'.

Research conducted by Mass et al. in 2006[49] has suggested that there is a positive association between the proportion of green space in a residential area and the perceived general health of residents, and that this relationship is strongest for lower socio-economic groups.

A literature review for Greenspace Scotland[50] found a positive relationship between green space and general health, and also identified that 'the attractiveness or quality of greenspace is an important determination of green space use'. The 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.

A systematic review by Zhang et al., 2020 based on fourteen studies found a positive association between exposure to green space and mental health and wellbeing in adolescents, suggesting that improving accessibility, availability and quality of green space is likely to generate a positive impact on adolescents'

[48] O'Brien, L., Williams, K. and 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.
[49] Maas, J., Verheij, R., Groenewegen, P., de Vries, S. and Spreeuwenberg, P. (2006), *Green space, urbanity and health: how strong is the relation?* Journal of epidemiology and community health.
[50] Croucher, K., Myers, L., and Bretherton, J. (2007), *The links between greenspace and health: a critical literature review*, Greenspace Scotland.

mental well-being[51]. Similar results were observed among studies in women[52] and older adults[53] , although the association was not observed for a change in green space in the latter.

A by Houlden et al. in 2019[54] was undertaken to assess whether the amount of greenspace within a radius of individuals' homes was associated with mental wellbeing, testing the UK government guideline that greenspace should be available within 300m of homes. Findings showed that an increase in one hectare of greenspace within 300m of residents was associated with a statistically significant increase in life satisfaction, worth and happiness.

A review of the literature examining the association between access to green space and the mental wellbeing of children concluded that access to green spaces promoted attention and memory, fostered supportive social groups and self-discipline and improved symptoms of attention deficit hyperactivity disorder[55]. A systematic review of observational evidence has shown an association between long-term exposure to green space and cognition (intellect and cognisance) over the life course[56]. The association is seen cross-sectionally in both adults and children.

A review of evidence by Natural England[57] showed that access to natural environments promotes physical activity including walking, gardening and children's play. The review shows evidence that people with poorer health tend to benefit more from physical activity in natural environments. In addition, a systematic review of physical activity and green spaces concluded that, compared with indoor activities, physical activity in natural environments is associated with greater feelings of revitalisation, increased energy and positive engagement, and decreases in tension, confusion, anger and depression[58]. A review by Jia et al., 2020[59] found a positive association between access to green space and physical activity and a negative association between access to green space and television watching time, body mass index and weight status among children.

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[51] Zhang Y, Mavoa S, Zhao J, Raphael D, Smith M. (2020). The Association between Green Space and Adolescents' Mental Well-Being: A Systematic Review. Int J Environ Res Public Health. Sep 11;17(18):6640. doi: 10.3390/ijerph17186640. PMID: 32932996; PMCID: PMC7557737.

[52] Torres Toda M, Anabitarte Riol A, Cirach M, Estarlich M, Fernández-Somoano A, González-Safont L, Guxens M, Julvez J, Riaño-Galán I, Sunyer J, Dadvand P. (2020). Residential Surrounding Greenspace and Mental Health in Three Spanish Areas. Int J Environ Res Public Health. Aug 5;17(16):5670. doi: 10.3390/ijerph17165670. PMID: 32764502; PMCID: PMC7460179.

[53] Noordzij JM, Beenackers MA, Oude Groeniger J, Van Lenthe FJ. (2020). Effect of changes in green spaces on mental health in older adults: a fixed effects analysis. J Epidemiol Community Health.74(1):48-56. doi: 10.1136/jech-2019-212704. PMID: 31630120; PMCID: PMC6929698.

[54] Houlden V. et al. (2019), A spatial analysis of proximate greenspace and mental wellbeing in London. Applied Geography 109:102036.

[55] McCormick, R. (2017) *Does Access to Green Space Impact the Mental Well-being of Children: A Systematic Review*. Vol 37 pages 3-7.

[56] Keijezer, C et al. (2016), L*ong-term Green Space Exposure and Cognition Across the Life Course: A Systematic Review. Current Environmental Health Reports* Vol 3(4): 468-477.

[57] Natural England Access to Evidence Information Note EIN019 (2016), Links between natural environments and physical activity: evidence briefing.

[58] Thompson Coon J., et al. (2011), Does participating in physical activity in outdoor natural environments have a greater effect on physical and mental wellbeing than physical activity indoors? A Systematic Review. Environmental Science & Technology 45: 1761.

[59] Jia, P, Cao, X, Yang, H, et al. (2020), Green space access in the neighbourhood and childhood obesity. *Obesity Reviews*. 1– 12. https://doi.org/10.1111/obr.13100

Green space exposure was also positively associated with sleep in a systematic review by Shin et al., 2020[60] which revealed that eleven out of thirteen studies found an association between green space exposure and sleep quality and quantity.

A systematic review and meta-analysis[61] analysing green and blue space and birth outcomes found that increase in residential greenness was statistically significantly associated with higher birth weight (0.001 (95%CI <0.001, 0.002) and lower odds (0.95, (95%CI 0.92, 0.97) of small for gestational age. There was no statistically significant association with preterm birth, low birth weight or pregnancy outcomes. This study provides emerging evidence on the effect of green and blue space and birth outcomes however, more studies are needed to further elucidate the association.

A2 Air quality, noise and neighbourhood amenity

Air Quality

The WHO recognises outdoor air pollution as a major environmental health problem for all countries including high-income countries[62]. There is a wealth of evidence showing the association of nitrogen dioxide and particulate matter on poor health outcomes. Epidemiological studies have shown that long-term exposure to air pollution (over years or a lifetime) reduces life expectancy, due to cardiovascular and respiratory diseases and lung cancer. Short-term exposure (over hours or days) to increased levels of air pollution can also have a range of health effects, including effects on lung function, asthma, as well as increases in respiratory and cardiovascular hospital admissions, and mortality[63]. Additionally, outdoor air pollution can influence productivity and contribute to social costs such as increasing days off work and school due to restricted health[64].

A Public Health England review[65] of interventions to improve outdoor air quality and public health found clear evidence that air pollution is the largest environmental risk to the health of the public in the UK. The review found that:

[60] Jong Cheol Shin, Kaustubh Vijay Parab, Ruopeng An, Diana S. Grigsby-Toussaint. (2020). Greenspace exposure and sleep: A systematic review. Environmental Research. Volume 182: 109081. ISSN 0013-9351, https://doi.org/10.1016/j.envres.2019.109081.
[61] Akaraci S, Feng X, Suesse T, Jalaludin B, Astell-Burt T. (2020). A Systematic Review and Meta-Analysis of Associations between Green and Blue Spaces and Birth Outcomes. *International Journal of Environmental Research and Public Health*. 17(8):2949. https://doi.org/10.3390/ijerph17082949
[62] WHO Topic Sheet. (2018) Ambient (outdoor) air quality and health. Available online at: https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health.
[63] Public Health England 2018. Guidance: Health Matters: air pollution. Available online at: https://www.gov.uk/government/publications/health-matters-air-pollution/health-matters-air-pollution.
[64] IOM Working for a Healthier Future. Scotland's Environment (2015) Air Quality, Health, Wellbeing and Behaviour. Available online at: https://www.environment.gov.scot/media/1133/iom-seweb-aq-health-behaviour-review.pdf.
[65] Public Health England (2019), Review of interventions to improve outdoor air quality and public health. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/795185/Review_of_interventions_to_improve_air_quality.pdf.

- it is estimated that between 28,000 and 36,000 deaths each year are attributed to human made air pollution;
- there is a close association with cardiovascular and respiratory disease, including lung cancer;
- there is emerging evidence that other organs may also be affected, with possible effects on dementia, low birth weight and diabetes; and
- it concluded that the most impactful interventions would be those that reduce emissions of air pollution at source.

Whilst there is no clear evidence of a safe level of exposure below which there is no risk of adverse health effects, there is sufficient evidence available to demonstrate that the adverse effects of air pollution on health outcomes is widely accepted. There is consensus that lowering levels of nitrogen dioxide and particulate matter will bring additional health benefits. Therefore, the evidence is judged to be strong.

Vulnerable groups

A UK Department for the Environmental, Food and Rural Affairs (DEFRA)[66] found that in England that there is a tendency for higher relative mean annual concentrations of nitrogen dioxide NO2 and PM10 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 exceedances 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.

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'. A similar report in 2017[67] assessing London air pollution exposure in 2013 found that populations living in most deprived areas are on average more exposed to poor air quality (NO2 and PM10) than less deprived areas. However, there is wide variation in pollution concentration values across the social gradient and inequalities in air pollution exposure are predicted to reduce by 2020 because of new policies aiming to reduce road transport emissions. Further, proportionally more people have been found to be exposed to exceedances of the NO2 EU limit value in areas with a high proportion of Black/ African/ Caribbean/ Black British and Other ethnic groups.

[66] Department of Environment, Food and Rural Affairs, Netcen, Department for Communities and Local Government. (2006) 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.
[67] Brook, R., King, K.(2017) Updated Analysis of Air Pollution Exposure in London. Aether

A recent PHE[68] report has stated that children, older people, and people with chronic health problems such as pre-existing cardiovascular and respiratory conditions are the most vulnerable to air pollution.

According to the Lancet Commission on pollution and health[69] children are at high risk of pollution related disease and even extremely low-dose exposures to pollutants during windows of vulnerability in utero and in early infancy can result in disease, disability, and death in childhood and across their lifespan. Research has shown that long - term exposure to PM2.5 affects children's lung development, including deficits in lung function[70,71].

Noise

Sound is produced when something vibrates and sends waves of energy through the air to our ears. Noise is typically defined as 'unwanted sound'[72]. Noise from environmental sources, in particular from road traffic, is increasingly accepted as influencing the health and well-being of individuals or populations[73]. The WHO has stated that "Environmental noise is a threat to public health, having negative impacts on human health and well-being"[74].

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)[75] but can also be physiological[76,77]. There are a wide range of non-auditory health effects that may be associated with exposure to environmental noise.

The 2018 WHO Guidelines on Environmental Noise for the European Region[78] undertook a series of systematic reviews synthesising exposure and associated

[68] Public Health England. (2019) Review of Interventions to Improve Outdoor Air Quality and Public Health. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/795185/Review_of_interventions_to_improve_air_quality.pdf
[69] Landrigan, P.J., et al. (2018) The Lancet Commission on Pollution and Health, Lancet 391:462-512
[70] Guo C, Hoek G, Chang LY, et al. (2019) Long-Term Exposure to Ambient Fine Particulate Matter (PM2.5) and Lung Function in Children, Adolescents, and Young Adults: A Longitudinal Cohort Study. Environ Health Perspect. 127(12):127008. DOI:10.1289/EHP5220
[71] Public Health England. (2019) Review of Interventions to Improve Outdoor Air quality and Public Health. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/795185/Review_of_interventions_to_improve_air_quality.pdf
[72] Basner, M., Babisch, W., Davis, A., Brink, M., Clark, C., Janssen, S., & Stansfeld, S. (2014) Auditory and Non-Auditory Effects of Noise on Health. Lancet, 383(9925), 1325-1332.
[73] European Environment Agency (2020). Environmental Noise in Europe 2020. Luxembourg.
[74] World Health Organization. (2009) Night Noise Guidelines for Europe.
[75] Guski, R., Schreckenberg, D., & Schuemer, R. (2017). WHO Environmental Noise Guidelines for the European Region: A Systematic Review on Environmental Noise and Annoyance. International Journal of Environmental Research and Public Health, *14*(12), 1539
[76] van Kamp, I., Simon, S., Notley, H., Baliatas, C., & van Kempen, E. (2020) Evidence Relating to Environmental Noise Exposure and Annoyance, Sleep Disturbance, Cardio-Vascular and Metabolic Health Outcomes in the Context of IGCB (N): A Scoping Review of New Evidence. International Journal for Environmental Research and Public Health, 17, 3016.
[77] World Health Organisation. (2018) The World Health Organization Guidelines for Environmental Noise Exposure for the European Region. Copenhagen: Denmark.
[78] World Health Organisation. (2018) Environmental Noise Guidelines for the European Region. Available from: http://www.euro.who.int/en/publications/abstracts/environmental-noise-guidelines-for-the-european-region-2018

impacts on health in order to develop a set of guidelines on how to protect human health. Recommendations were formulated based on the strength of evidence from various noise sources. The systematic reviews concluded that there was evidence for an association of road traffic and railway noise on CVD and metabolic disorders, sleep disturbance, annoyance, and cognitive impairment, with suggestive but weaker evidence (often due to lack of studies) for effects on mental health and birth weight.

A recent review[79] commissioned by DEFRA considered how evidence has changed since the publication of the WHO Environmental Noise Guidelines. Clark et al., 2020 found associations between noise and medication use and interview measures of depression and anxiety. Associations with some cancer outcomes were also observed however, the quality of evidence across studies remains low for these outcomes.

Vulnerable groups

A literature review by van Kamp and Davies in 2013 [80] looked at 62 papers published from April 2006 to April 2011, which included the impact of environmental noise on the health of vulnerable people, including primary school children, young adolescents, preschool children, the elderly, and children with autism, asthma and attention deficit hyperactivity disorder. A more recent report published by European Environment Agency in 2020[81] adds that shift workers, noise sensitive individuals, pregnant woman, and socio-economically disadvantaged individuals are also particularly vulnerable to noise. Both reviews agree, that while vulnerable groups of people may be more at risk from exposure to environmental noise than healthy adults, there is comparatively little research focusing on the adverse health effects of noise on vulnerable people.

A evidence review[82] of social inequalities in environmental noise exposure in WHO European region found higher noise exposures in groups with lower socioeconomic position. A study in London, looking to quantify socioeconomic and ethnic inequalities found that socioeconomic inequalities in road traffic noise were generally small. The odds of living within a 50dB contour of rail noise were 19% higher for black compared to white individuals[83].

[79] Clark, C., Crumpler, C., & Notley, A. H. (2020) Evidence for Environmental Noise Effects on Health for the United Kingdom Policy Context: A Systematic Review of the Effects of Environmental Noise on Mental Health, Wellbeing, Quality of Life, Cancer, Dementia, Birth, Reproductive Outcomes, and Cognition. International journal of environmental research and public health, 17(2), 393. DOI: https://doi.org/10.3390/ijerph17020393

[80] van Kamp, I. and Davies, H. (2013) Noise and Health in Vulnerable Groups: A Review. Noise and Health.

[81] European Environment Agency. (2020) Environmental Noise in Europe. Available from: https://www.eea.europa.eu/publications/environmental-noise-in-europe

[82] Dreger, S., Schüle, S. A., Hilz, L. K., & Bolte, G. (2019) Social Inequalities in Environmental Noise Exposure: A Review of Evidence in the WHO European Region. International Journal of Environmental Research and Public Health. 16(6), 1011. DOI: https://doi.org/10.3390/ijerph16061011

[83] Tonne C, Milà C, Fecht D, et al. (2018) Socioeconomic and Ethnic Inequalities in Exposure to Air and Noise Pollution in London. Environ Int.115:170-179. doi:10.1016/j.envint.2018.03.023

Neighbourhood Amenity

A study in 2015[84] sought to quantify the relationship between environmental aesthetics and human health by comparing geographic data against self-rated health. This found that ‘inhabitants of more scenic environments report better health, across urban, suburban and rural areas, even when taking core socioeconomic indicators of deprivation into account, such as income, employment and access to services.’

A Position Statement published by the Landscape Institute in 2013[85] looked at evidence linking the quality of places with health and wellbeing across a range of environmental, social and lifestyle determinants. This document cited evidence to suggest that health and wellbeing are influenced positively by a variety of factors including the perceived attractiveness of the environment.

A 2020 literature review[86] assessed the association between neighbourhood aesthetics and childhood obesity (body mass index, obesity/overweight status), physical activity and active transport to school in individuals aged <18 years from 25 studies. Three quarters (75%) of studies reported non-significant associations between neighbourhood aesthetics and physical activity and weight whereas half (50%) of studies showed that neighbourhood aesthetics is associated with active transport to schools. This suggests that the findings are mixed, and more research is needed to understand the epidemiological relationship.

A literature review[87] assessing the association between the built environment and physical activity in the elderly found that aesthetically pleasing scenery such as greenery is positively associated with physical activity in the individuals over 65 years of age.

[84] Seresinhe, C., Preis, T. and Moat, H. (2015). *Quantifying the Impact of Scenic Environments on Health*, Scientific Reports.
[85] Landscape Institute (2013). *Public Health and Landscape – Creating healthy places.* Available online at: https://www.landscapeinstitute.org/PDF/Contribute/PublicHealthandLandscape_CreatingHealthyPlaces_FINAL.pdf.
[86] Qu, P, Luo, M, Wu, Y, et al. (2020). Association between neighborhood aesthetics and childhood obesity. *Obesity Reviews*. 1– 19. https://doi.org/10.1111/obr.13079
[87] Bonaccorsi G, Manzi F, Del Riccio M, Setola N, Naldi E, Milani C, Giorgetti D, Dellisanti C, Lorini C. (2020). *Impact of the Built Environment and the Neighborhood in Promoting the Physical Activity and the Healthy Aging in Older People: An Umbrella Review.* International Journal of Environmental Research and Public Health. 17(17):6127. https://doi.org/10.3390/ijerph17176127

A3 Accessibility and active travel

Accessibility

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[88].

A survey by Randall in 2008 for the Office for National Statistics (ONS)[89] found that 5% of adults in Great Britain reported feeling a sense of isolation due to difficulties accessing local shops and services, and 22% of adults knew someone who felt this way. Overall, the survey highlighted that alongside crime and cleanliness, the most important factors that made a place suitable to live was access to services, particularly health services.

As the WHO[90] 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.

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[91]included proximity of recreation facilities, housing density, street design and accommodation for safe pedestrian, bicycle, and wheelchair use.

Active Travel

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. 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[92].

A systemic review[93] 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;

[88] HUDU (2013). HUDU Planning for Health. Rapid Health Impact Assessment Tool. (NHS) London Healthy Urban
Development Unit
[89] Randall, C. (2012) Measure National Well-being: Where We Live 2012. Office for National Statistics Report.
[90] WHO (2012) Addressing the social determinants of health: the urban dimension and the role of local government
[91] 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
[92] Caldwell, L.L. (2005), Leisure and health: Why is leisure therapeutic?
[93] National Obesity Observatory (2011) Data sources: environmental influences on physical activity and diet

- 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.

Altering the environment, particularly an urban landscape may also lead to unintended changes in patterns of mobility, physical activity and therefore eventually population health[94]. 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[95].

A systematic review[96] of built environment effects on physical activity and active transport showed a positive effect of walkability components, provision of quality parks and playgrounds, and installation of or improvement in active transport infrastructure on active transport, physical activity and visits or use of these settings

A 2013 literature review focused on the health benefits of active travel by Saunders et al.[97] determined that, although there is no clear evidence in the effectiveness of active travel in reducing obesity, 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. Data from a report by the National Obesity Observatory in 2011[98] suggests a number of factors impact active travel including access to fitness facilities, distance to destinations, land use, urban walkability scores, safety, availability of equipment and the provision of footpaths.

More recent research[99] found that people living in walkable neighbourhoods tend to be more physically active and less likely to be obese which could contribute to the reduced risk of diabetes for older adults. Similarly, a study[100] of the UK

[94] 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.
[95] Sustainable Development Commission (2008) Health, Place and Nature
[96] Smith, M., Hosking, J., Woodward, A. et al. (2017) Systematic Literature Review of Built Environment Effects on Physical Activity and Active Transport – An Update and New Findings on Health Equity. Int J Behav Nutr Phys Act **14,** 158. DOI: https://doi.org/10.1186/s12966-017-0613-9
[97] Saunders, L., Green, J., Petticrew, M., Steinback, R. and Roberts, H. (2013), *What are the health benefits of active travel? A systematic review of trials and cohort studies,* PLoS ONE.
[98] NHS, National Obesity Observatory (2011), *Data sources: environmental influences on physical activity and diet, https://khub.net/c/document_library/get_file?uuid=68b8960e-4145-4ed2-b9f8-1ce767f1d2ff&groupId=31798783.*
[99] Booth GL, Creatore MI, Luo J, et al. (2019) Neighbourhood Walkability and the Incidence of Diabetes: An Inverse Probability of Treatment Weighting Analysis. J Epidemiol Community Health.
[100] Sarkar C, Webster C, Gallacher J. (2018) Neighbourhood Walkability and Incidence of Hypertension: Findings from the study of 429,334 UK Biobank participants. International Journal of Hygiene and Environmental Health. 21:3:458-468.

Biobank cohort found that neighbourhood walkability is associated with lower levels of blood pressure and reduced risk of hypertension. This suggests that there could be wider health implications of walkable neighbourhoods and increased physical activity.

Vernon et al. in 2014[101] suggest that road safety inventions can also help to encourage physical activity by creating a safer physical road environment and reducing the level of danger posed to vulnerable road users. Vernon et al. also noted that that 'road safety has a much wider impact on health than just preventing injuries. This is because some forms of travel (i.e. walking and cycling), and the provision for them, bring more health benefits for individuals and society than others. However, the way that people travel is influenced by concerns about actual or perceived safety; effective intervention to reduce road danger can encourage more people to travel by these active, health-promoting modes.'

The health benefits of physical activity are summarised in a 2011 Department of Health Report[102], which states that 'regular physical activity can reduce the risk of many chronic conditions including coronary heart disease, stroke, type 2 diabetes, cancer, obesity, mental health problems and musculoskeletal conditions'. The report also states that 'even relatively small increases in physical activity are associated with some protection against chronic diseases and an improved quality of life.' A systematic review of reviews and meta-analyses[103] found that physically active older adults are at reduced risk of all cause and cardiovascular mortality, breast and prostate cancer, fractures, recurrent falls, ADL disability and functional limitation and cognitive decline, dementia, Alzheimer's disease and depression. Further evidence[104] suggests that lack of physical activity in children can lead to CVD and associated diseases such as obesity which can be tracked from adolescence into adulthood, contributing to premature mortality.

A systematic review and meta-analysis[105] of 150 Cochrane systematic reviews published between 2000 and 2019 found physical activity was associated with a 13% reduction in mortality and an improvement in quality of life. Another systematic review and meta-analysis[106] assessing objective physical activity found a 40% decreased risk for mortality in individuals in the highest category of light, moderate to vigorous and total physical activity compared to the lowest.

[101] Vernon, D. (2014), Road Safety and Public Health, Royal Society for the Prevention of Accidents (RoSPA).
[102] Department of Health (2011), *Start Active, Stay Active: A report on physical activity from the four home counties,* Chief Medical Officers. Available online at: https://www.gov.uk/government/publications/start-active-stay-active-a-report-on-physical-activity-from-the-four-home-countries-chief-medical-officers.
[103] Cunningham C, O' Sullivan R, Caserotti P, Tully MA. (2020). Consequences of physical inactivity in older adults: A systematic review of reviews and meta-analyses. Scand J Med Sci Sports. 30(5):816-827. doi: 10.1111/sms.13616. Feb 4. PMID: 32020713.
[104] Kumar, B, Robinson, R and Till. S (2015), Physical activity and health in adolescence. Clinical Medicine. Vol 15 267-72.
[105] Posadzki, P., Pieper, D., Bajpai, R. *et al.* Exercise/physical activity and health outcomes: an overview of Cochrane systematic reviews. *BMC Public Health* **20,** 1724 (2020). https://doi.org/10.1186/s12889-020-09855-3
[106] Ramakrishnan R., He JR., Ponsonby AL., Woodward M., Rahimi K., Blair SN., Dwyer T., (2021), Objectively measured physical activity and all-cause mortality: A systematic review and meta-analysis, Preventive Medicine,Volume 143,106356,ISSN 0091-7435, https://doi.org/10.1016/j.ypmed.2020.106356.

A literature review of studies from various countries examining the relationship between physical activity and happiness[107] showed that as little as 10 minutes of physical activity per week resulted in increased levels of happiness. A systematic review undertaken by the Department of Health and Human Services[108] in the US, noted that a major finding of the evidence was that regular physical activity reduced the risk of clinical depression and depressive symptoms among people both with and without clinical depression. Physical activity was also found to reduce the severity of those symptoms irrespective of number of depressive symptoms. The review also found that perceived quality of life is improved by regular physical activity. A cross-sectional and longitudinal study[109] found that walking had positive associations with psychological and social wellbeing, strolling in nature with emotional and social wellbeing and endurance training with subjective health. A systematic review and meta-analysis[110] of 42 studies including 37,408 individuals found a significant protective effect of physical activity on depression further highlighting the importance of physical activity on mental health.

Vulnerable groups

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 [111,112.] The benefits for the elderly include retention of mobility, cognitive function and independence113.

A report by PHE[114] has reported that people with lower socioeconomic status, older people, people with disabilities, women, minority ethnic groups (specifically Bangladeshi and Pakistani women), and lesbian, bisexual, transgender people are particularly vulnerable to physical inactivity[115].

[107] Zhang, Z. & Chen, W. (2018), A Systematic Review of the Relationship Between Physical Activity and Happiness. Journal of Happiness .pp 1-8.
[108] 2018 Physical Activity Guidelines Advisory Committee. 2018 Physical Activity Guidelines Advisory Committee Scientific Report. Washington, DC: U.S. Department of Health and Human Services, 2018. Available online at: https://health.gov/paguidelines/second-edition/report/pdf/PAG_Advisory_Committee_Report.pdf.
[109] Kekäläinen, T. et al. (2019), Cross-Sectional and Longitudinal Associations between Leisure Time Physical Activity, Mental Well-Being and Subjective Health in Middle Adulthood, Applied Research Quality Life, doi.org/10.1007/s11482-019-09721-4.
[110] Gianfredi V, Blandi L, Cacitti S, Minelli M, Signorelli C, Amerio A, Odone A. (2020). Depression and Objectively Measured Physical Activity: A Systematic Review and Meta-Analysis. *International Journal of Environmental Research and Public Health*. 17(10):3738. https://doi.org/10.3390/ijerph17103738
[111] Department of Health and Social Care. (2019) UK Chief Medical Officers' Physical Activity Guidelines. Available from: https://www.gov.uk/government/publications/physical-activity-guidelines-uk-chief-medical-officers-report
[112] Department of Health. (2004) Choosing Health Summaries: Diet and Nutrition. Public Health White Paper.
[113] Department of Health. (2004) Choosing Health Summaries: Diet and Nutrition. Public Health White Paper.
[114] Public Health England. (2020) Health Matters: Physical Activity – Prevention and Management of Long Term Conditions. Available from: https://www.gov.uk/government/publications/health-matters-physical-activity
[115] Public Health England. (2016) Health Matters: Getting Every Adult Active Every Day. Available from: https://www.gov.uk/government/publications/health-matters-getting-every-adult-active-every-day

A4 Crime reduction and community safety

Community safety is crucial in determining health and wellbeing. It has been stated 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.'

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[116].

The same factors that affect local crime rates often seem to affect health[117]. A recent report on Measuring National Wellbeing[118] has also identified crime as a key indicator in determining wellbeing.

Hirschfield[119] 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 antisocial behaviour, which are not strictly criminal offences, can have adverse effects on health.

A recent review undertaken by Lorenc et al[120] 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.

The study by Lorenc et al[121] 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.'

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

[116] British Medical Association (1999). 'Health and Environmental Impact Assessment: an Integrated Approach'. Earthscan Publications Ltd.
[117] Greater London Authority (2005) 'Review of the London Health Strategy High Level Indicators'. London Health Commission.
[118] Randall, C. (2012), Measuring National Well-being, Where we Live,Office for National Statistics
[119] Hirschfield.A, (2003). 'The Health Impact Assessment of Crime Prevention'. Sourced from NHS National Institute for Health and Clinical Evidence.
[120] 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.
[121] 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.

crime, and design that promotes 'eyes on the street' helping to reduce anti-social behaviour.

Vulnerable groups

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.

A5 Access to work and training

Access to work

The Marmot Review (2010)[122], which was commissioned by the Department of Health to look into health inequalities in England, looks at the differences in health and well-being 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".

The Marmot Review 10 Years On (2020)[123] outlines areas of progress and decline since 2010. The report reiterates the importance of employment as being protective of health; "Being in good employment is usually protective of health while unemployment, particularly long-term unemployment, contributes significantly to poor health…. Unemployment and poor-quality work are major drivers of inequalities in physical and mental health."

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 follows that maintaining high levels of employment opportunities has positive effects on health. Results from a systematic review conducted in 2016[124] found that evidence that employment can be beneficial for peoples' wellbeing, specifically their mental health.

A Briefing by the British Medical Association (2017)[125] stated that 'Most long-term conditions are more common in adults from lower socio-economic groups, including the working poor, such as diabetes, chronic obstructive pulmonary disease, arthritis and hypertension. For example, two-fifths of adults in England aged 45 to 64 with below-average incomes have a limiting long-term illness, more than twice the rate of adults of the same age with above-average incomes. Multimorbidity is also more common among deprived populations'. A 2017 report

[122] 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.
[123] Marmot, M., Allen, J., Boyce, T., Goldblatt, P., Morrison, J. (2020) Health equity in England: The Marmot Review 10 years on. London: Institute of Health Equity.
[124] Modini, M., Joyce, S., Mykletun, A., Christensen, H., Bryant, RA., Mitchell, PB., Harvey, SB. (2016) The mental health benefits of employment: results of a systematic meta-review. Australasian Psychiatry.
[125] British Medical Association. (2017). *Health at a price - Reducing the impact of poverty. A briefing from the board of science*. Available at: https://www.bma.org.uk/media/2084/health-at-a-price-2017.pdf

by the Mental Health Foundation[126] found that three in four people living in the lowest household income bracket report having experienced a mental health problem, compared to six in ten of the highest household income bracket.

Employment is related to social and psychological well-being; a study commissioned by the Department of Work and Pensions[127] 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

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.

The Marmot 2010 review[128] 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.

The Marmot Review 10 Years On (2020)[129] review emphasised that to reduce health inequalities training and education are important both physical and mental health.

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 well-being and for the longer-term social development of school leavers[130].

These findings are supported by the results from a systematic review[131] of 41 papers addressing learning at work. The review found that learning at work is beneficial for employee wellbeing, specifically increasing people's ability to cope with stress, improved feelings of self-esteem; hope; and purpose.

A 2020 study comparing life-course trajectories of employment quality and health in the U.S.[132] found that people who were less educated had poorer employment and worse self-rated health. The prevalence of poor/fair self-rated health and moderate mental illness was greatest among individuals who were minimally attached, returning to the labour force, and precariously employed. Another study

[126] Mental Health Foundation. (2017). *Surviving or Thriving? The state of the UK's mental health*. https://www.mentalhealth.org.uk/publications/surviving-or-thriving-state-uks-mental-health. Accessed March 2021
[127] Waddell, G., Burton, A. K. (2007) Is work good for your health and well-being? The Stationery Office.
[128] 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.
[129] Marmot, M., Allen, J., Boyce, T., Goldblatt, P., Morrison, J. (2020) Health equity in England: The Marmot Review 10 years on. London: Institute of Health Equity.
[130] Waddell G and Buton A. K. (2006) Is work good for your health and well-being? The Stationary Office.
[131] What Works Wellbeing. (2017) Learning at work and wellbeing: what works?.
[132] Eisenberg-Guyot J., Peckham T., Andrea SB., Oddo V., Seixas N., Hajat A., (2020) Life-course trajectories of employment quality and health in the U.S.: A multichannel sequence analysis. Social Science & Medicine, Volume 264,113327,ISSN 0277-9536, Available oneline at: https://doi.org/10.1016/j.socscimed.2020.113327.

used data from 26 Organisation for Economic Co-operation and Development (OECD) countries to assess associations between education and health indicators[133]. This found that adults with higher educational attainment had better health and lifespans compared to less educated adults.

Vulnerable groups

A scoping study[134] investigating the impact of unemployment and precarious employment on the health of young people demonstrated that there is evidence that young people are especially vulnerable to health problems when unemployed or working in precarious conditions.

Furthermore, supporting these findings, a recently published systematic review[135] commissioned by the Public Health Agency of Sweden found an association between unemployment among young people and poor mental health.

These findings are indicative that young people are particularly vulnerable to the negative health effects resulting from unemployment.

A6 Social cohesion & lifetime neighbourhoods

Social Cohesion

Social cohesion is defined as the quality of social relationships and existence of trust, mutual obligations and respect in communities or the wider society[136]. This is closely related to levels of inequality or exclusion within a given community.

Social cohesion 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"[137].

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 hobbies and interests and interact socially. This includes transport infrastructure, which enables residents to integrate within and move outside of their own community.

Social cohesion has been linked to volunteering, the empowerment of individuals and ethnic diversity. It also provides opportunities for communities to participate

[133] Raghupathi, V., Raghupathi, W. The influence of education on health: an empirical assessment of OECD countries for the period 1995–2015. (2020). Arch Public Health 78, 20. Available online at: https://doi.org/10.1186/s13690-020-00402-5
[134] Vancea, M., Utzet, M. (2017) How unemployment and precarious employment affect the health of young people: a scoping study on social determinants.
[135] Bartelink, V, H, M., Guldbrandsson, K, K., Bremberg. (2019) Unemployment among young people and mental health: a systematic review.
[136] World Health Organisation. (2003). Social Determinants of Health: The Solid Facts 2nd Edition.
[137] The World Bank. (1999) What is Social Capital? PovertyNet.

in the planning of healthcare services and social infrastructure, improving community cohesion and positively impacting mental health and well-being[138].

Social cohesion has been shown to positively correlate with a reduced fear of isolation and positive mental health. In contrast, inequalities within a population and crime and safety can erode social cohesion within a community[139].

According to one evidence review[140] social capital may have various effects on health:

- protect health by buffering against the effects of life events which may be damaging to health;
- 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.

A literature review conducted in 2017 found that social capital influences the self-management of chronic diseases, such as diabetes and chronic obstructive pulmonary disease, as well as self-reported health, depressive symptoms, body mass index, and positive health behaviours[141]. This review highlighted several ways in which social capital can influence health: "through a direct extension of resources to an individual via reciprocity exchange (e.g. caregiving, transportation to medical appointments), through its effect on health-related behaviours (e.g. tobacco and alcohol use, diet, exercise), or by its impact on other social determinants, such as education, employment and volunteering. Social capital also affects health by mitigating the threat of stress-inducing circumstances." Social capital can influence health through 'collective efficacy' where cohesive groups undertake health-promoting action together.

A systematic review[142] on social capital and multiple health outcomes carried out in 2019 found evidence to suggest a positive correlation between social capital and mental and physical health, and that social capital contributes to lower mortality. The analysis found that it was difficult to assess whether an increase in health outcome was due to an increase in social capital, which limits the ability to understand whether and how social capital interventions can improve health.

[138] Department for Communities and Local Government. (2008) Predictors of Community Cohesion: Multi-level Modelling of the 2005 Citizenship Survey.
[139] Department for Communities and Local Government. (2008) Predictors of Community Cohesion: Multi-level Modelling of the 2005 Citizenship Survey.
[140] 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.
[141] Cockerham, W. (2017) The Social Determinants of Chronic Disease. American Journal of Preventive Medicine. 52, S5-S12.
[142] Ehsan, A., et al. (2019), *Social capital and health: A systematic review of systematic reviews*, SSM Population Health, doi:10.1016/j.ssmph.2019.100425.

Another 2019 systematic review[143] of studies assessing social capital and physical health (most frequently self-reported health and mortality) identified mixed findings. The study suggested that social capital may be an important protective factor for some physical health outcomes, but that more research is needed to draw conclusions on the associations.

A systematic review conducted in 2020[144] found positive associations between social cohesion and several population health outcomes including physical activity, health weight and depression. A 2020 meta-analysis of studies into the relationship between social capital and health[145] found significant positive associations between social capital types (cognitive, structural, bonding, bridging, linking) and health outcomes such as mortality, disease/illness and depression. It was noted that, although significant, the effects were consistently very small.

Multiple studies[146,147,148] suggest a positive correlation between social capital and physical and mental health. However, a systematic review[149] of systematic reviews found numerous non-significant or negative relationships between social capital and health. This review also found that the efficacy of social capital interventions on health remained unclear. It is difficult to assess whether an increase in health is due to an increase in social capital, which limits the ability to understand whether and how social capital interventions can improve health.

Lifetime Neighbourhoods

The Communities and Local Government (CLG) document Towards Lifetime Neighbourhoods: Designing sustainable communities for all[150] describes lifetime neighbourhoods as being "sustainable communities that offer a good quality of life to all generations".

They should aim to be:

- accessible and inclusive;
- aesthetically pleasing and safe (in terms of both traffic and crime), and easy;
- pleasant to access; and

[143] Rodgers J., Valuev AV., Hswen Y., Subramanian S.V., (2019). *Social capital and physical health: An updated review of the literature for 2007–2018.* Social Science & Medicine, Volume 236, 112360, ISSN 0277-9536,
https://doi.org/10.1016/j.socscimed.2019.112360.
[144] Pérez E, Braën C, Boyer G, Mercille G, Rehany É, Deslauriers V, Bilodeau A, Potvin L. (2020). *Neighbourhood community life and health: A systematic review of reviews*. Health Place. 61:102238. doi: 10.1016/j.healthplace.2019.102238. Epub 2019 Nov 14. PMID: 31735517.
[145] Xue, XW. ReedR ., Menclova A.,(2020). *Social capital and health: a meta-analysis,* Journal of Health Economics, Volume 72, 102317, ISSN 0167-6296, https://doi.org/10.1016/j.jhealeco.2020.102317.
[146] Cockerham, W. (2017) The Social Determinants of Chronic Disease. *American Journal of Preventive Medicine. 52*, S5-S12.
[147] Ehsan, A., et al. (2019) *Social Capital and Health: A Systematic Review of Systematic Reviews.* SSM Population Health. DOI:10.1016/j.ssmph.2019.100425
[148] Jennings, V and Bamkole, O. (2019) The Relationship between Social Cohesion and Urban Green Space: An Avenue for Health Promotion. International Journal of Environmental Research and Public Health. 16(3), 452.
[149] Ehsan, A., et al. (2019) Social Capital and Health: A Systematic Review of Systematic Reviews, SSM Population Health. DOI :10.1016/j.ssmph.2019.100425
[150] Ed Harding, International Longevity Centre UK. (2007) Towards Lifetime Neighbourhoods: Designing Sustainable Communities for All. Department for Communities and Local Government.

- a community that offers plenty of services, facilities and open space.

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.

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

An article published in the International Journal for Equity in Health by Uphoff et al in 2013[151] describes social capital, at an individual level, as focusing on personal resources that emerge from social networks where individuals have good access to information, services and support. The article argues that cultural and socioeconomic aspects can act as a barrier to social capital. For example, some types of social capital may only be beneficial to those who have access to them through sufficient economic capital, such as expensive sports clubs.

A systematic review of social capital in children and adolescents found that social capital generated at both the family and community level can influence mental health and behavioural problems in young people, of importance is the young person's own network of social support[152]. Young people also "accrue indirect benefit from their parents having wider and higher quality social support networks"

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, asylum seekers and refugees and ex-offenders[153].

[151] Uphoff, E., Pickett, K., Cabieses, B., Small, N. and Wright, J. (2013) A Systematic Review of the Relationships Between Social Capital and Socioeconomic Inequalities in Health: A Contribution to Understanding the Psychosocial Pathway of Health Inequalities, International Journal for Equity in Health.
[152] McPherson, K. (2014) The Association Between Social Capital and Mental Health and Behavioural Problems in Children and Adolescents: An Integrative Systematic Review. BMC Psychology.
[153] Wanless. D. (2003) Securing Good Health for the Whole Population. Population Health Trends. HM Treasury/Department of Health.

Appendix B

HUDU Checklist

B1 HUDU Rapid Health Impact Assessment Matrix

The HUDU Rapid Health Impact Assessment Matrix[154] is designed to rapidly 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 should be used prospectively at the earliest possible stage during plan preparation, or prior to the submission of a planning application to inform the design, layout and composition of a development proposal.

The matrix 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. It is generic and should be localised for specific use. Not all the issues or assessment criteria may be relevant, and the user is encouraged to prioritise specific actions which focus on key impacts.

The assessment matrix identifies eleven topics or broad determinants. Under each topic, Section 2 of the tool identifies examples of planning issues which are likely to influence health and wellbeing and the section also provides supporting information and references.

Health impacts may be short-term or temporary, related to construction or longer-term, related to the operation and maintenance of a development and may particularly affect vulnerable or priority groups of the population. Where an impact is identified, actions should be recommended to mitigate a negative impact or enhance or secure a positive impact.

[154] London Healthy Urban Development Unit. (2019) HUDU Planning for Health – Rapid Health Impact Assessment Tool. Available from: https://www.healthyurbandevelopment.nhs.uk/wp-content/uploads/2019/10/HUDU-Rapid-HIA-Tool-October-2019.pdf

B1.1 Housing quality and design

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
Does the proposal seek to meet all 16 design criteria of the Lifetime Homes Standard or meet Building Regulation requirement M4 (2)?	N/A	N/A	The Proposed Development is not demolishing or constructing any housing.	N/A	N/A
Does the proposal address the housing needs of older people, ie extra care housing, sheltered housing, lifetime homes and wheelchair accessible homes?	N/A	N/A	The Proposed Development is not demolishing or constructing any housing.	N/A	N/A
Does the proposal include homes that can be adapted to support independent living for older and disabled people?	N/A	N/A	The Proposed Development is not demolishing or constructing any housing.	N/A	N/A
Does the proposal promote good design through layout and orientation, meeting internal space standards?	N/A	N/A	The Proposed Development is not demolishing or constructing any housing.	N/A	N/A
Does the proposal include a range of housing types and sizes, including affordable housing responding to local housing needs?	N/A	N/A	The Proposed Development is not demolishing or constructing any housing.	N/A	N/A

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
Does the proposal contain homes that are highly energy efficient (eg a high SAP rating)?	N/A	N/A	The Proposed Development is not demolishing or constructing any housing.	N/A	N/A

B1.2 Access to healthcare services and other social infrastructure

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
Does the proposal retain or re-provide existing social infrastructure?	N/A	N/A	The Proposed Development is not demolishing or constructing healthcare services or social infrastructure.	N/A	N/A
Does the proposal assess the impact on healthcare services?	N/A	N/A	The Proposed Development is not demolishing or constructing healthcare services or social infrastructure.	N/A	N/A
Does the proposal include the provision, or replacement of a healthcare facility and does the facility meet NHS requirements?	N/A	N/A	The Proposed Development is not demolishing or constructing healthcare services or social infrastructure.	N/A	N/A
Does the proposal assess the capacity, location and accessibility of other social infrastructure, eg schools, social care and community facilities?	N/A	N/A	The Proposed Development is not demolishing or constructing healthcare services or social infrastructure.	N/A	N/A
Does the proposal explore opportunities for shared community use and co-location of services?	N/A	N/A	The Proposed Development is not demolishing or constructing healthcare services or social infrastructure.	N/A	N/A
Does the proposal contribute to meeting primary, secondary and post 19 education needs?	N/A	N/A	The Proposed Development is not demolishing or constructing healthcare services or social infrastructure.	N/A	N/A

B1.3 Access to open space and nature

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
Does the proposal retain and enhance existing open and natural spaces?	Yes	Yes	Construction: The Story Garden is a meanwhile use temporary community garden on the Site of the Proposed Development. The construction of the Proposed Development will require the Story Garden to close. Operation: The Proposed Development will provide publicly accessible areas and a community learning garden, as part of the mitigation for replacing the Story Garden. The community learning garden will be a co-designed learning garden on Ossulston Street frontage. This will act as a hub for community led (applicant funded) satellite greening and growing projects in Somers Town. The Proposed Development will also provide a Learning Open Reading Room which will be a dedicated open space for families to come to, children to play or read and events to happen in for families and the local community. The Proposed Development will include landscaping that increases habitat connectivity and the overall biodiversity of the Site post-construction. For example: • Create biodiverse roof areas (intensive and extensive typologies including brown roof) to provide habitat for birds and invertebrates within the Site.	Construction: Negative Operation: Positive	The applicant is having ongoing discussion to identify projects within the local area that could be undertaken during the construction period to provide access to open and natural space in the absence of the 'Story Garden' during construction. A community gardener has been hired to work with local residents to create their own gardens in the absence of Story Garden.

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
			• Create water features to increase biodiversity at a site as well as provide a drinking and bathing resource for birds. • Create green walls using climbing plants to add height and structure to landscaping at the Site. • A tree survey will be completed to promote retention of trees or planting of more trees, if appropriate.		
In areas of deficiency, does the proposal provide new open or natural space, or improve access to existing spaces?	N/A	Yes	The Proposed Development will provide publicly accessible areas including a learning open reading room and community learning garden, as part of the mitigation for replacing the Story Garden.	Positive	N/A
Does the proposal provide a range of play spaces for children and young people?	N/A	Yes	The Proposed Development will provide baby changing areas and feeding facilities in gender neutral or inclusive spaces.	Positive	N/A
Does the proposal provide links between open and natural spaces and the public realm?	N/A	Yes	The Proposed Development includes improvements to the public realm along the frontage of Ossulston street, Midland Road and Dangoor Walk. This involves contribution towards highways works, pedestrian and environment contribution and future maintenance of the public realm.	Positive	N/A
Are the open and natural spaces	N/A	Yes	The Proposed Development will ensure that all spaces in the Proposed Development are safe for use by the most vulnerable members of the community. This includes design measures such as	Positive	N/A

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
welcoming and safe and accessible for all?			level/gently grated routes, stepped and step free access to cycle storage, provision of cycle storage for accessible and non-standard cycles, evacuation lifts for people who cannot use stairs, level access to Midland Road entrance and raised ground to reduce gradient to Ossulston Street.		
Does the proposal set out how new open space will be managed and maintained?	N/A	Yes	The Proposed Development includes has considered management and maintenance of the public realm and has set aside funds for future maintenance and management.	Positive	N/A

B1.4 Air quality, noise and neighbourhood amenity

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
Does the proposal minimise construction impacts such as dust, noise, vibration, and odours?	Yes	N/A	The construction impacts will be managed through the draft CMP.	Negligible	None identified.
Does the proposal minimise air pollution caused by traffic and energy facilities?	Yes	Yes	Construction: The comprehensive air quality assessment of $PM_{2.5}$, PM_{10} and NO_2 concluded that there is likely to be negligible air quality impact from the dust-generating activities and construction vehicle emissions on site for sensitive receptors with the appropriate mitigation measures implemented, as specified in the draft CMP. It is therefore not expected that air pollution arising from the Proposed Development will negatively impact the health of residents. Operation: The comprehensive air quality assessment of $PM_{2.5}$, PM_{10} and NO_2 demonstrates no negative impact on air quality.	Construction: Negative Operation: Negligible	None identified.
Does the proposal minimise noise pollution caused by traffic and commercial uses?	Yes	Yes	Construction: A comprehensive noise assessment found a significant negative impact on noise from construction activities for residents on Ossulston Street and St Pancras Hotel. No significant impact on noise from construction traffic noise was demonstrated. All available measures will be implemented to reduce noise from construction activities wherever possible as set out in the draft CMP.	Construction: Negative Operation: Negligible	Localised enclosures and innovative hoarding will be introduced to mitigate noise impacts from construction activities in addition to measures set out in the draft CMP. Measures to limit vibration from piling activities will be

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
			A comprehensive vibration assessment demonstrated no negative impact on vibration with appropriate mitigation measures introduced. Operation: A comprehensive noise assessment demonstrated no negative impact on operational noise or vibration.		introduced in addition to measures set out in the draft CMP.

B1.5 Accessibility and active travel

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
Does the proposal prioritise and encourage walking (such as through shared spaces?)	N/A	Yes	The Proposed Development will provide walking access to the buildings on site from multiple access points on Midland Road and Ossulston Street. All the access points would be designed to be easily visible and step free. Greater permeability and safe pedestrian routes through the Proposed Development increase walkability in the area, including creation of new east-west and north-south routes across the Site. Creation of a new sequence of connected public realm improvements between Somers Town and St. Pancras.	Positive	None identified.
Does the proposal prioritise and encourage cycling (for example by providing secure cycle parking, showers and cycle lanes)?	N/A	Yes	The Proposed Development will facilitate access to the cycle store in the basement via a dedicated ramp from Ossulston Street. 172 short stay cycle parking spaces for use by the public / visitors in the basement will be provided. 1172 long stay cycle parking facilities for use by staff will be provided. In addition, showers and lockers will be provided adjacent to the cycle store, along with drying facilities. A fully accessible unisex shower and washroom will also be provided. There are seven Cycle Hire docking stations within walking distance of the Proposed Development. Three cycling routes have been identified in the vicinity of the Site (Cycleway 6,	Positive	None identified.

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
			Local Cycle Network Route 6, Local Cycle Network Route 16).		
Does the proposal connect public realm and internal routes to local and strategic cycle and walking networks?	N/A	Yes	The Proposed Development will incorporate appropriate signage to direct people to external walking and cycling routes. The Active Travel Zone (ATZ) assessment identified six walking routes connecting the Proposed Development to bus stops, London Underground, London Overground and National Rail stations in the vicinity of the Site. Additionally, three cycling routes have been identified in the vicinity of the Site (Cycleway 6, Local Cycle Network Route 6, Local Cycle Network Route 16).	Positive	None identified.
Does the proposal include traffic management and calming measures to help reduce and minimise road injuries?	N/A	Yes	The local road network surrounding the Site is (A501 Euston Road to the south, Ossulston Street to the west and Midland Road to the east) subject to a 30mph speed limit while LB Camden has a speed limit of 20mph. The A501 Euston Road to the south forms the northern boundary of the London Congestion Charge (LCC) zone, but the road itself is not part of it. The streets surrounding the Site are subject to parking controls as the Proposed Development is in a Controlled Parking Zone (CPZ) known as CA-G. Parking restrictions apply from Monday to Saturday, from 08:30 to 18:30.	Positive	None identified.

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
Is the proposal well connected to public transport, local services and facilities?	N/A	Yes	The Proposed Scheme has a Public Transport Accessibility Level (PTAL) rating of 6b which indicates an 'excellent' connectivity to the surrounding network, and the highest possible score on the PTAL scale. The Proposed Development is well served by bus services with six bus stops within 640m walking distance of the Site. Kings Cross St Pancras, St Pancras International and Euston station are within close vicinity of the Site which provide service to a variety of underground, overground, and national rail services.	Positive	None identified.
Does the proposal seek to reduce car use by reducing car parking provision, supported by the controlled parking zones, car clubs and travel plans measures?	N/A	Yes	The Proposed Development is to be car-free (except six spaces for staff, servicing and disabled users), with no non-operational parking on-site. The streets surrounding the Site are subject to parking controls as the Proposed Development is in a Controlled Parking Zone (CPZ) known as CA-G. Parking restrictions apply from Monday to Saturday, from 08:30 to 18:30. The A501 Euston Road to the south forms the northern boundary of the London Congestion Charge (LCC) zone which aims to reduce car travel, but the road itself is not part of it. There are several car club parking spaces within a 640m walking distance of the Site. The nearest car club parking bay, operated by Zipcar, is approximately 60m to the west of the Site on Ossulston Street.	Positive	None identified.

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
			Additionally, there is a taxi rank located on Midland Road, approximately 350m to the east of the Site.		
Does the proposal allow people with mobility problems or a disability to access buildings and places?	N/A	Yes	The Proposed Development will ensure that all spaces in the Proposed Development are fully accessible and safe for use by all members of the community. Level or gently grated routed will be provided for pedestrians across the Site. Stepped and step free access will be provided to the cycle storage. 5% of cycle parking will be provided for non-standard cycles and 5% for accessible cycles. Ground will be raised to provide level access to Midland Road entrance and to reduce the gradient from Ossulston Street. Evacuation lifts will be provided for people who cannot use stairs. The access to the Disabled Staff and Maintenance Spaces car parking spaces would be from Ossulston Street.	Positive	None identified.

B1.6 Crime reduction and community safety

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
Does the proposal incorporate elements to help design out crime?	Yes	Yes	Construction: It is expected that crime construction safety and security impacts will be managed through the draft CMP and are not considered to give rise to health effects. This will include lit, clean, well signed access. Operation: The public realm incorporates a number of design features that reduce the risk of crime and hostile vehicles, including planters, benches and overt bollards to create a protective envelope that is in keeping with its surroundings. Other security concerns will be mitigated through design interventions, such as: • CCTV surrounding the Site • Controlled access to back of house areas • Liaising with neighbouring organisations • Improved level of outdoor lighting surrounding the new extension • Provision of safe routes for pedestrians.	Construction: N/A Operation: Negligible	None identified.
Does the proposal incorporate design techniques to help people feel secure and	N/A	Yes	Various spaces within the Proposed Development will be categorised. This underpins a holistic strategy that is being developed in accordance with the BL security	Negligible	None identified.

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
avoid creating 'gated communities'?			policy and specialist advice covering both criminal and terrorist related activity. This process allows the design to incorporate measures that allow for natural surveillance and support on open and welcoming space that looks and feels safe and secure.		
Does the proposal include attractive, multi-use public spaces and buildings?	N/A	Yes	The Proposed Development includes careful planning and sensitive consideration for design of multi-use public spaces.	Negligible	None identified.
Has engagement and consultation been carried out with the local community?	Yes	Yes	Given the current circumstances of the COVID-19 pandemic, an extensive virtual consultation strategy was undertaken in November and December 2020. This included setting out the project, answering questions and engaging with the local community and relevant stakeholders. A broad variety of channels were employed to promote the consultation in order to maximise engagement with local communities and included – website, online webinars, stakeholder letters, community newsletter, advert in Camden New Journal, freephone consultation line, dedicated email address, printed copies of the website and social media advertising. The feedback from the attendees has been a key part of the design process. The main points of concern raised were: concerns over level of development happening in the area, concerns over traffic management, and construction works in the local area.	Negligible	None identified.

B1.7 Access to healthy food

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
Does the proposal facilitate the supply of local food, ie allotments, community farms and farmers' markets?	N/A	Yes	The Proposed Development is not likely to affect access to healthy food as the Site is located in central London with easy access to food and shops including supermarkets, pharmacies, and food outlets. The provision of healthy food options is not reported on in detail at this stage, but catering contracts will be explored at future stages.	N/A	N/A
Is there a range of retail uses, including food stores and smaller affordable shops for social enterprises?	N/A	Yes	As the detail on specific uses for retail is not yet defined, and the Site is located in central London with range of retail uses present including food stores and smaller affordable shops, this was scoped out of the study.	N/A	N/A
Does the proposal avoid contributing towards an over-concentration of hot food takeaways in the local area?	N/A	Yes	The provision of food / cafes is not specified in the proposed floor areas at this stage.	N/A	N/A

B1.8 Access to work and training

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
Does the proposal provide access to local employment and training opportunities, including temporary construction and permanent 'end-use' jobs?	Yes	Yes	Construction: The Proposed Development will provide construction job, work placement and apprenticeship opportunities over the course of the construction period. Opportunities will be advertised through Kings Cross Construction Skills Centre (KXCSC), The Somers Town Job Hub, Good Work Camden and others working alongside Camden Council's Economic Development team before marketing more widely. The Proposed Development aims to work with local partners and organisations to ensure that pre-employment support is given to local job seekers and young people, through form of workshops, training etc. Operation: The Proposed Development will provide job, work placement, and apprenticeship opportunities for local people in the new commercial, retail and library space. There is a commitment to proactively promote all roles, below degree level in the local community ahead of wider marketing by collaborating with Somers Town Jobs Hub, Good Work Camden and/or Kings Cross Construction Skills Centre. Providing CV workshops, Adult Learning Programmes and awareness raising activities around the skills and opportunities in the	Positive	None identified.

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
			business sectors in the building, and creating accessible job descriptions will aim to reduce barriers and facilitate local people being able to apply for and attain jobs in the Proposed Development. Other commitments relevant to employment and/or training opportunities: • 75% of student work experience opportunities at BL ringfenced for local schools and colleges per annum. • A mentoring / work experience scheme facilitated between BIPC alumni and local young people. • A new Youth Programme for 16-25-year olds led by BL Learning team, including a Young Entrepreneurship Scheme with the BIPC. • Increase engagement with local schools from 47% to 100% as a result of increased Learning Centre space. • Businesses in the Maker Space encouraged to provide an internship for a local young person. • New 4-6-week ESOL course promoted through local networks. • All employees will be paid at least London Living minimum wage.		

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
			• Compact and BL Community Engagement teams actively promoting opportunities into the community. • Collaborate with Knowledge Quarter organisations and Camden Council reps to optimise opportunities and learning. • Regular meetings with the ST Jobs Hub and Good Work Camden to share skills forecasting in relation to new jobs and opportunities in the library and commercial space, and to plan for future training and work experience opportunities.		
Does the proposal provide childcare facilities?	N/A	N/A	The application does not include land use for childcare and/or child mining facilities and therefore, the planning permission will not allow implementation of this use.	N/A	None identified.
Does the proposal include managed and affordable workspace for local businesses?	N/A	Yes	The Proposed Development will support start-ups, microbusiness, and small medium enterprises (SME) by providing free Wi-Fi and study desks and affordable, subsidised incubator space within the library for socially responsible and creative MSMEs. It will also enhance the Library Business and Intellectual Property Centre (BIPC) by 1) hosting a BIPC start up day annually, free of charge to local residents 2) BIPC workshop rooms available in the evenings and weekends to established community partners at no cost.	Positive	None identified.

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
Does the proposal include opportunities for work for local people via local procurement arrangements?	Yes	Yes	Construction & Operation: Job, apprenticeship and work experience opportunities will be promoted through local networks and organisations first (Good Work Camden, Kings Cross Construction Skills Centre, and Somers Town Job Hub) before marketing more widely. The Proposed Development aims to work with local partners and organisations to ensure that pre-employment support is given to local job seekers and young people, through form of workshops, training etc. The Proposed Development aims to increase engagement with local schools from 47% to 100% as a result of increased Learning Centre space within the Proposed Development. Subject to ongoing development discussions, potential opportunities for engagement include work experience, 1-2-1 mentoring, career talks and workplace visits.	Positive	None identified.

B1.9 Social cohesion and lifetime neighbourhoods

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
Does the proposal connect with existing communities, ie layout and movement which avoids physical barriers and severance and land uses and spaces which encourage social interaction?	Yes	Yes	Construction: The closure of the Story Garden may affect connection between existing community members as the benefits of participation in the community activities held at the garden will not accrue. The design of the new community garden will be done through engagement of the local community and in collaboration with Global Generation. Further, a Neighbours Advisory Panel (NAP) will represent community interests during construction. Operation: The Proposed Development aims to connect with existing community in various ways. It will host community events programmes, tours, and school visits. This includes discussions on hosting an Open Iftar event on the Piazza, annual Christmas tree lighting event with local schools, and regular Sunday film club run in conjunction with Winter Shelter season in partnership with local Homelessness charity C4WS. There will be a mechanism in place to include local voices in decisions around commissioning for exhibitions. This includes providing staff and space for co-curation of projects, events, and displays within the new development. The Proposed Development will establish: • Community learning garden	Construction: Negative Operation: Positive	The design of the new community learning garden during construction will be undertaken with engagement from the local community. The applicant is having ongoing discussion to identify projects within the local area that could be undertaken during the construction period to provide a natural space where the community can get together and improve social cohesion in the absence of the Story Garden. The Proposed Development also aims to set up a Neighbours' Advisory Panel (NAP) to help shape community project ideas, grant distribution and engage the local community during the construction phase.

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
			• Learning Centre available for community groups to book, free of charge • A learning open reading room. which will be a dedicated open space for families to come to, children to play or read and events to happen in for families and the local community. • Local Community Ambassadors in the Library to inform community programme and support communication.		
Does the proposal include a mix of uses and a range of community facilities?	N/A	Yes	The Proposed Development includes a mix of uses and a range of community facilities including: • Library space (including a Learning Centre) • Office space (including lab enabled use) • Retail space • Community learning garden and Learning Open Reading Room • CR2 infrastructure	Positive	None identified.
Does the proposal provide opportunities for the voluntary and community sectors?	N/A	Yes	The SVF for the Proposed Development lists several volunteer and community partner sectors such as the Camden Spark network and Somers Town History Club. This partnership will ensure opportunities for the voluntary and community sectors are present and the Proposed Development aims to include them in the supply chain.	Positive	None identified.
Does the proposal address the six key	N/A	Yes	While the Proposed Development will not formally align with the Lifetime Neighbourhoods	Positive	None identified.

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
components of Lifetime Neighbourhoods?			components, it does address many of the key components, including: • Resident empowerment – The Proposed Development will hold a variety of events (i.e. Adult Learning Programme, Community/Neighbourhood Advisory Group, exhibitions, workshops) to improve and empower the resident community. • Access – The Proposed Development is designed to promote accessibility for everyone. It contributes to creating walkable environments and promotes active travel and transport. Additionally, it is situated near a range of transportation methods to enable ease of access. It also considers vulnerable members of the community by ensuring all spaces are fully accessible and safe for use. • Services and amenities – The Proposed Development is located in central London, close to many services and amenities. It will also provide library, retail, office and open space on site. • Built and natural environments – The Proposed Development will include publicly accessible areas such as open green space, a community garden, along with retail, office, education, and training spaces contributing to the built and natural environments		

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
			• Social networks/well-being – There will be both formal and informal opportunities and activities for all individuals, respective of age, cultures and ethnicities to participate in (i.e. workshops, exhibitions, community programs, learning and advisory groups).		

B1.10 Minimising the use of resources

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
Does the proposal make best use of existing land?	N/A	N/A	The Proposed Development makes best use out of the existing land. The land use includes a library, office, laboratory, retail, public open space and CR2 infrastructure. This was scoped out of the study as health effects associated with making best use of existing land occur at a regional/national level and no specific health effects are anticipated within the study area of the Proposed Development.	N/A	N/A
Does the proposal encourage recycling (including building materials)?	N/A	N/A	Construction: Activities associated with encouraging recycling during construction include: • A pre-demolition audit with the max waste generation of 6.5t/100m^{2}GIA. • Recycling 95% of non-hazardous construction, demolition, and excavation waste. • The materials used for construction will be composed of 80% recycled content. Operation: The Proposed Development will establish recycling loop systems and provision of collection facilities, including paper, food, lights, and batteries. Construction & Operation: A Circular Economy Statement will be adopted according to GLA's New London Plan SI7 to demonstrate the re-use and recycle of demolished materials, reduce material	N/A	N/A

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
			demand of the new design and design for re-use and recyclability. This was scoped out of the study as health effects associated waste management and recycling occur at a regional/national level and no specific health effects are anticipated within the study area of the Proposed Development.		
Does the proposal incorporate sustainable design and construction techniques?	N/A	N/A	Operation: Sustainable design objectives of the Proposed Development include: • An all-electric building in normal operation, with no fossil fuel combustion on site for space heating or hot water. • Reduction of carbon emissions on - site from renewable technologies, including heat pumps. • Reduction of greenhouse gas emissions arising from the leakage of refrigerants from building systems. • All operational parking will provide infrastructure for electric or other ultra-low emission vehicles. • Energy efficient external lighting and transport systems. • Targeting BREEAM's 'Excellent' rating throughout the Proposed Development. This was scoped out of the study as health effects associated with sustainable design and construction techniques occur at a regional/national level and no	N/A	N/A

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
			specific health effects are anticipated within the study area of the Proposed Development.		

B1.11 Climate change

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
Does the proposal incorporate renewable energy?	N/A	Yes	The Proposed Development aims to provide a reduction in carbon dioxide emissions on-site from renewable technologies, including heat pumps. This was scoped out of the study as health effects associated with renewable energy occur at a regional/national level and no specific health effects are anticipated within the study area.	N/A	N/A
Does the proposal ensure that buildings and public spaces are designed to respond to winter and summer temperatures, ie ventilation, shading and landscaping?	N/A	Yes	The Energy team has undertaken a microclimate study for winter/summer in the landscape / public space surrounding the atrium to ensure the Proposed Development responds correctly to temperature changes. Wind mitigation for comfortable public realm is also considered into the environmental design of the Proposed Development. This was scoped out of the study as the measures taken ensure the Proposed Development responds correctly to temperature changes and therefore, no health effects are anticipated within the study area.	N/A	N/A
Does the proposal maintain or enhance biodiversity?	N/A	Yes	The ecological value of the area will be enhanced according to the local, regional, and national priorities.	N/A	N/A

Assessment criteria	Relevant to construction?	Relevant to operation?	Details/evidence	Potential health impact?	Recommended mitigation or enhancement actions
			The Proposed Development will include landscaping that increases the overall biodiversity of the Site post- construction. This was scoped out of the study as these issues are covered by the access to open space and nature aspect of the assessment.		
Does the proposal incorporate sustainable urban drainage techniques?	N/A	Yes	The Proposed Development incorporates sustainable urban drainage techniques. The flood risk assessment and Sustainable Drainage Systems (SuDS) comply with the planning policy. The GOV.UK flood map shows that the Site is located in Flood Zone 1. This equates to a low probability of flooding. Therefore, this was scoped out of the study as there is no existing flooding issues affecting the health of the community within the study area.	N/A	N/A

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