

CITY AIRPORT DEVELOPMENT PROGRAMME  
(CADP1) S73 APPLICATION

# ENVIRONMENTAL STATEMENT

VOLUME 2: APPENDICES

DECEMBER 2022



# P e l l F r i s c h m a n n

City Airport Development  
Programme (CADP1) S73  
Application

Volume 2: Appendices  
Appendix 12.2 Health Methods

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# APPENDIX 12.2 Health Methods

## Scope of the Assessment

### Technical Scope

1.1.1 The effects of the Proposed Amendments that are considered likely and which have the potential to be significant with regards to human health are summarised in this section. The conclusions of the health chapter are in relation to population level effects, as is set out in relevant guidance for assessing health in EIA (see Error! Reference source not found.).

1.1.2 For air quality, noise and travel qualitative assessments of population health effects have been undertaken, based on the quantitative modelling and analysis reported in those ES chapters respectively (**Chapter 8** – Noise and Vibration, **Chapter 9** – Air Quality and **Chapter 10** – Surface Access).

1.1.3 The assessment covers all aspects of the Proposed Amendments and does not assess components individually or in isolation. Specific activities or elements that have driven the findings of quantitative assessments are described in those relevant chapters of the ES.

1.1.4 The outcomes considered in the scope of this health chapter cover a range of health-related states or events. These include physical and mental health outcomes; issues of health service capacity; and changes in health-related behaviours or risk factors.

1.1.5 The following sections summarises the proposed scope of the health assessment, based on the tools used by the IPH (2021). The headings used reflect strategic determinants of health set out in the guidance that span environmental, social, behavioural, economic and institutional factors.

1.1.6 A key principle of scoping is to be proportionate, so that the assessment focuses only on those public health issues that have the potential to be both 'likely' and 'significant'.

1.1.7 Table Error! No text of specified style in document.-1 summarises the determinants of health scoped-in for further assessment that are the focus of this chapter. **Error! Reference source not found.** summarises the determinants of health or health aspects scoped-out of further assessment because it has been agreed with LBN through the Scoping Report and their Scoping Opinion that these issues do not the potential for likely significant population health effects.

**Table Error! No text of specified style in document.-1: Determinants of health scoped-in**

Determinant of Health	Scoped-in
Healthy Lifestyles	<ul style="list-style-type: none"> <li>➤ Access to open space: Physical activity and mental health are linked to access and amenity of recreation and leisure spaces. Regard is given to vulnerability, including due to age, poor health, socio-economic status and social disadvantage. The focus is on populations accessing public areas of green space that are identified as experiencing significant adverse day-time effects within the noise assessment.</li> </ul>
Safe and cohesive communities	<ul style="list-style-type: none"> <li>➤ Community Identity: the assessment considers The Airport's potential beneficial effects on communities through employment opportunities and access to travel, as well as the potential adverse effects in relation to reduced amenity affecting social networking and social gatherings. Both may affect community cohesion and social isolation.</li> <li>➤ Transport: the assessment considers transport impacts associated with road or route safety as passenger numbers increase, potentially affecting community severance and journey times, including routine access to healthcare and emergency response times. Opportunities to improve active travel and multi-modal share are considered in association with the transport assessment.</li> </ul>
Socio Economic Effects	<ul style="list-style-type: none"> <li>➤ Good quality employment: the population health benefits during construction and operation are considered, including direct and indirect employment and investment.</li> <li>➤ Training opportunities: the assessment considers educational opportunities in relation to adult training and career development during construction and operation.</li> </ul>

Determinant of Health	Scoped-in
Environmental Effects	<ul style="list-style-type: none"> <li>➤ Operational Noise: The potential for both day-time and night-time effects on population health from changes in operational noise are considered. How the Proposed Amendments affect noise levels is assessed in the noise chapter; with the public health, population level, implication of such changes considered in this health chapter. A range of noise metrics are considered. To avoid assessing issues twice, where noise effects relate to issues of day-time amenity, these are discussed in terms of the effect on healthy lifestyles (discussed above), including mental health and physical activity related outcomes.</li> <li>➤ The health assessment highlights any instances where the change in noise results in widespread new exposures, or reductions in exposures, across a population which are above thresholds defined in the noise assessment as being significant. In such cases, populations are defined in relation to the relevant geographic extent for the source of exposure, with a focus on small area populations. Within these populations, vulnerabilities to noise are considered including where day-time rest is important due to poor health or age. Any widespread changes in noise below the thresholds of noise assessment significance are also be considered in relation to the public health implication.</li> <li>➤ Air quality: the health assessment considers the significance of non-threshold effects of NO<sub>2</sub> and PM<sub>2.5</sub> on population health, this goes beyond the approach in the air quality assessment and reflects a public health perspective on air quality. In accordance with the HIA guidance for assessing health in EIA, the assessment of health significance is with reference to the statutory air quality standards set for the purpose of health protection by the UK Government. WHO air quality guideline values are also referenced as an aspirational target and remain a relevant public health contextual consideration; however, the national statutory standards are the appropriate benchmark for an assessment of significance that informs a UK planning determination.</li> <li>➤ The issue of ultra-fine particulate matter (UFP) is discussed in this health assessment and includes a qualitative assessment following the framework common to all determinants of health as set out in guidance. Key publications from the emerging scientific literature on UFP have been reviewed and summarised to support an appropriate public health response to UFP.</li> <li>➤ Climate Change: A brief discussion considers the climate change assessment and its implications for health inequalities.</li> </ul>
Health and Social Care Services	<ul style="list-style-type: none"> <li>➤ NHS Routine Service Planning: the increase in passengers arriving at The Airport (inbound or outbound) has potential implications for NHS routine service planning. The health assessment considers the current level of demand, e.g. ambulance callouts from The Airport, and the expected change due to the proposed uplift in passengers.</li> </ul>

**Table Error! No text of specified style in document.-2: Determinants of health scoped-out**

Determinant of Health	Scoped-out
Healthy Lifestyles	<ul style="list-style-type: none"> <li>➤ The Proposed Development has workforce implications. The potential for health promotion during construction and operation has been considered as a good practice enhancement measure but is otherwise scoped-out.</li> <li>➤ Issues of community health behaviours being affected by the presence of the construction workforce are scoped-out. This reflects the fact that the construction of the remaining CADP1 structures and those additional construction activities that will occur to facilitate the proposed S73 changes (e.g., reconfiguration of existing stands) are relatively modest and would be predominantly within the Airport boundary. It also reflects the expectation of a relatively small construction workforce during the extended CADP1 build-out between 2024 and 2031.</li> <li>➤ Diet / Healthy Foods: The availability or price of healthy foods is not considered relevant to the S73 application. Diet as an issue is therefore scoped-out.</li> </ul>
Safe and cohesive communities	<ul style="list-style-type: none"> <li>➤ Whilst there would be a greater transitory population associated with arrivals and departures from The Airport, the effects are highly localised to the Airport itself. The potential for such an influx, in itself, to affect community identity to an extent that could influence community health and wellbeing is scoped-out.</li> <li>➤ Housing and the Built Environment: the Proposed Amendments do not give rise to direct impacts on the built environment and there are no changes to the approved CADP1 buildings and infrastructure. There is therefore limited potential for any widespread adverse effects on views or lighting.</li> <li>➤ Crime: an assessment of actual and perceived crimes, including safeguarding, people trafficking and modern slavery is scoped out on the basis that the Airport would appropriately scale its security measures in line with passenger growth, regulatory requirements and normal good practice.</li> </ul>
Socio Economic Effects	<ul style="list-style-type: none"> <li>➤ Occupational health and safety: the Airport operates appropriate policies in accordance with current regulation and good practice, including in relation to general employment and avoiding issues of discrimination. Appropriate policies and standards are expected for construction contractors.</li> </ul>
Environmental Effects	<ul style="list-style-type: none"> <li>➤ Separate assessment of air quality exposures to airport workers are scoped out on the basis that statutory occupational standards would be met. Transitory exposures within statutory air quality</li> </ul>

	<p>standards to passengers and visitors to the Airport are scoped out as a separate assessment, as such limited exposure would not be expected to result in significant population health effects. Air quality changes in airport buildings due to the project changes are not expected to significantly differ from outdoor exposure. Odour is assessed in the air quality chapter. A watching brief on this issue has been kept and as no significant odour effects are identified in the air quality chapter, this issue remains scoped out of the health assessment.</p> <ul style="list-style-type: none"> <li>➤ Water and soil quality: the changes are operational rather than construction activity that could give rise to such effects. Issues such as runway de-icer discharges into watercourses will continue to be managed under permits issued by the Environment Agency, Thames Water and RoDMA to maintain health and ecological protection standards. Similarly, the implications for on-site water demand, waste and sanitation as a result of greater passenger numbers would be met through existing and future infrastructure in accordance with the CADP1 planning permission.</li> <li>➤ Electro-magnetic fields (EMF): the Airport commits to adopt the International Commission on Non-ionizing Radiation Protection (ICNIRP) guidelines (ICNIRP, 1998) and Government voluntary Code of Practice on EMF public exposure (Department of Energy &amp; Climate Change, 2012). EMF strength reduces rapidly with distance, often requiring only a few meters separation between the source and receptor, the likelihood of any adverse effect is greatly reduced by the inherent airside restrictions at airports and perimeter fences. On the basis that the abovementioned ICNIRP guidelines and the Government's voluntary Code of Practice is adopted, there is not considered to be the potential for a risk to population health.</li> </ul>
Health and Social Care Services	<ul style="list-style-type: none"> <li>➤ Communicable illness, including in relation to Covid-19: The airport will continue to operate appropriate measures to safeguard the workforce, passengers and members of the public in line with up-to-date Government guidance.</li> <li>➤ Port health incidence procedures and surveillance: this is a public health function with national public health input, that is supported by LCY. Port health would be scaled in line with growth to meet statutory duties.</li> <li>➤ Health tourism: the great majority of overseas travellers who may use NHS services would have appropriate health insurance to reimburse the costs of their care. The scale of any change in communicable illness or health tourism associated with the proposed increase in passengers is considered unlikely to significantly affect population health.</li> </ul>

## Study Area

1.1.8 Human health effects are assessed in terms of population, rather than individual receptor outcomes. This is consistent with established principles of public health and impact assessment practice (Quigley, et al., 2006). It also reflects the EIA Regulations 2017 (HM Government, 2017) requirement to consider 'population and human health', including the interaction between these factors. Population health can be defined as the health outcomes of a group of individuals, including the distribution of such outcomes within the group. The field of population health includes health outcomes, patterns of health determinants and policies and interventions that link these (Kindig & Stoddart, 2003).

1.1.9 As study areas do not necessarily define the boundaries of potential health effects, particularly mental health effects, the health chapter uses study areas to broadly define representative population groups, including in relation to sensitivity, rather than to set boundaries on the extent of potential effects.

1.1.10 For the site-specific population, unless defined within the assessment with reference to the zone of influence set out in other ES chapters, this is defined for the health assessment using the area wards of: Royal Docks, E05000491; Custom House, E05000479; Beckton, E05000475; Thamesmead Moorings, E05000228; Abbey Wood, E05000214; Glyndon, E05000221; Woolwich Riverside, E05000230; Peninsula, E05000225; Blackwall & Cubitt Town, E05009318; Poplar, E05009328; Lansbury, E05009325; and Canning Town South, E05000478. These site-specific wards have been selected on the basis of proximity to the Airport and areas of higher deprivation.

1.1.11 In order to include further localised population effects along flight paths or surface access routes, regard has also been given to site-specific effects within the study areas of **Chapter 8** – Noise and Vibration, **Chapter 9** – Air Quality and **Chapter 10** – Surface Access.

## Temporal Scope

1.1.12 The assessment focuses on the change in the Principal Assessment Year between the Do Minimum (DM) (6.5mppa) and the Development Case (DC) scenario (9mppa). Where relevant ES chapters define specific assessment years, the health chapter assessment used those same assessment years:

- 2019 baseline year as set out in other ES chapters that inform the health assessment (for example see **Chapter 10** – Surface Access, **Chapter 8** – Noise and Vibration and **Chapter 9** – Air Quality assessments);
- The commencement year 2025, for both the DM and DC scenarios;
- The transitional year 2027, when the existing passenger cap is forecast to be reached under the DC Scenario, for both the DM and DC scenarios; and
- 2031 is the Principal Assessment Year. This is the year in which the proposed cap will be reached under DC scenario.

1.1.13 The assessment reaches one conclusion for each determinant of health comparing the DM and DC scenarios in 2031. The potential for different effects between the principal assessment year (2031), the transition year (2027) and the commencement year (2025) have been considered. The population health effect reported reflect the realistic worst-case assessment, for example taking into account any instances where effects during fleet transition are greater in say 2027 compared to 2031. Results are not presented by each assessment year to avoid duplication in line with proportionate assessment and reporting. Instances where effects may be greater in earlier years are discussed within the assessment as appropriate.

1.1.14 The temporal scope of the health chapter assessment used the following summary terms:

- ‘Very short term’ relates to effects measured in hours, days or weeks;
- ‘Short term’ relates to effects measured in months, (up to 24 months duration);
- ‘Medium term’ relates to effects measured in years (up to 48 months duration); and
- ‘Long term’ relates to effects measured in decades (e.g. the long-term effects on health from increased flights or long-term employment).

## Baseline Characterisation

1.1.15 The approach to defining the baseline involved collation and interpretation of published demographic, socio-economic and existing public health and healthcare capacity data.

1.1.16 The baseline was established through a desk-based study to gather relevant up-to-date health indicator data at the ward, local authority, regional and national level.

1.1.17 The health baseline is reported in **Appendix 12.3**, as well as indicators relevant to a particular issue being discussed within the assessment section of this chapter.

1.1.18 The following data sources have been used:

- Office of Health Improvement and Disparities (OHID) Fingertips, Local Health (OHID, 2022; OHID, n.d.);
- Office of National Statistics (ONS) and official labour market statistics (NOMIS) statistics (NOMIS, 2011). If available, 2021 census data will be included;
- Indices of deprivation mapping 2019, including ‘Index of multiple deprivation’ and individual sub-domains.
- Google Earth Pro 2021 aerial and street level photography review; and
- Local Joint Strategic Needs Assessment (JSNA) and Health and Wellbeing Strategy (HWS) reports have been analysed to provide additional context on local health circumstances, inequalities and public health priorities as appropriate.

1.1.19 Different communities have varying susceptibility to health and wellbeing effects (both adverse and beneficial) as a result of social and demographic structure, behaviour and relative economic circumstances.

1.1.20 These baseline data have been used to better understand local health and socio-economic circumstances. This understanding supports bespoke mitigation and community support initiatives tailored to local circumstances and need, where appropriate.

## Method of Assessment

### Combined Effects

1.1.21 This analysis considers how the same populations may be affected by more than one change in relevant health determinants, for example the combined effects of changes in air quality and noise on population health outcomes. The combined effects have regard to the nature of the interactions and the degree to which the same people are likely to be affected.

### Determinants of health, risk factors and health outcomes

1.1.22 The chapter uses the World Health Organization (WHO) definition of health, which states that health is a “*state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity*” (World Health Organization, 1948).

1.1.23 The chapter also uses the WHO definition for mental health, which is a “state in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community” (World Health Organization, 2007).

1.1.24 Health and wellbeing are influenced by a range of factors, termed the ‘wider determinants of health’. Determinants of health span environmental, social, behavioural, economic and institutional factors. Determinants therefore reflect a mix of influences from society and environment on population and individual health.

1.1.25 Impacts of the Proposed Amendments that result in a change in determinants have the potential to cause beneficial or adverse effects on health, either directly or indirectly. The degree to which these determinants influence health varies, given the degree of personal choice, location, mobility and exposure.

1.1.26 A change in a determinant of health affects does not equate directly to a change in population health. Rather the change in a determinant alters risk factors for certain health outcomes. The assessment considers the degree and distribution of change in these pathways. The analysis of health pathways focuses on the risk factors and health outcomes that are most relevant to the determinants of health affected by the Proposed Amendments. As there are both complex and wide-ranging links between determinants of health, risk factors and health outcomes, it would not be proportionate or informative for an assessment to consider every interaction.

1.1.27 Typically, the change in a risk factor may need to be large, sustained and widespread within a population for there to be a significant influence on public health outcomes.

### Population Health Approach and Vulnerable Groups

1.1.28 In line with IEMA, IPH and IAIA/EUPHA guidance a population health approach has been taken, informed by discussion of receptors within the other technical chapters of the ES.

1.1.29 For each determinant of health, the human health chapter identifies relevant inequalities through consideration of the differential effect to the ‘general population’ of the relevant study area and effects to the ‘vulnerable population group’ of that study area. The vulnerable population group being comprised of relevant sensitivities for that determinant of health. The following population groups have been considered:

- The ‘general population’ including residents, visitors, workers, service providers, and service users; and
- The ‘vulnerable group population’.

1.1.30 The assessment covers these populations within two groups. The general population of the relevant study area and the vulnerable sub-population for this area. The latter is a comprised of the vulnerabilities listed

above. The differentiation of these two groups, allows a discussion of any potentially significant health inequalities and the targeting of any mitigation.

1.1.31 That there is variation between people is widely acknowledged in public health. Public health frames this variation in terms of a likely distribution of effects within a population. This distribution can be applied conceptually or statistically as a way of describing how most individuals are likely to be affected. This links to the 'general population' analysis.

1.1.32 Because there are invariably people towards the extremes of the distribution, e.g. experiencing much smaller or larger effects, it is relevant to also consider sub-populations who may be more likely to experience such extremes because of certain characteristics. This links to the 'vulnerable group' analysis.

1.1.33 The methods draw on the list of vulnerable population groups set out in guidance. The following six broad population groups are used to inform a consistent narrative on potential health inequalities across the assessment. These groups are broadly defined to facilitate a consistent discussion across health issues. People falling into more than one group may be especially sensitive:

- Young age: Children and young people (including pregnant women and unborn children).
- Old age: Older people (particularly frail elderly);
- Low income: People on low income, who are economically inactive or unemployed/workless;
- Poor health: People with existing poor health; those with existing long-term physical or mental health conditions or disability that substantially affects their ability to carry out normal day-to-day activities;
- Social disadvantage: People who suffer discrimination or other social disadvantage, including relevant protected characteristics under the Equality Act 2010 or groups who may experience low social status or social isolation for other reasons; and
- Access and geographical factors: People experiencing barriers in access to services, amenities and facilities and people living in areas known to exhibit high deprivation or poor economic and/or health indicators.

1.1.34 The following general characterisations of how the 'general population' may differ from 'vulnerable group populations' were considered when scoring sensitivity. These statements are not duplicated in each assessment and apply (as relevant) to the issues discussed for both construction and operation.

- In terms of life stage, the general population can be characterised as including a high proportion of people who are independent, as well as those who are providing some care. By contrast, the vulnerable group population can be characterised as including a high proportion of people who are providing a lot of care, as well as those who are dependant;
- The general population can be characterised as experiencing low deprivation. However, the professional judgment is that the vulnerable group population experiences high deprivation (including where this is due to pockets of higher deprivation within low deprivation areas);
- The general population can be characterised as broadly comprised of people with good health status. Vulnerable groups, however, tend to include those parts of the population reporting bad or very bad health status;
- The general population tends to include a large majority of people who characterise their day-to-day activities as not limited. The vulnerable group population tends to represent those who rate their day-to-day activities as limited a little or limited a lot;
- Based on a professional judgement the general population's resilience (capacity to adapt to change) can be characterised as high whilst the vulnerable group population can be characterised as having limited resilience;
- Regarding the usage of affected infrastructure or facilities, the professional judgement is that the general population are more likely to have many alternatives to resources shared with the Proposed Amendments. For the vulnerable group population, the professional judgement is that they are more likely to have a reliance on shared resources; and

- The general population includes the proportion of the community whose outlook on the Proposed Amendments includes support and ambivalence. The vulnerable group population includes the proportion of the community who are uncertain or concerned about the Proposed Amendments.

1.1.35 As, all development has the potential for adverse effects to some particularly vulnerable individuals, the role of EIA health significance conclusions are not to set a threshold of 'no harm' from development, but to show where, at a population level, the harm should weigh strongly in the balance alongside the development's benefits for health and other outcomes.

1.1.36 As stated by guidance: "Where the effect is best characterised as only affecting a few individuals, this may indicate that a population health effect would not occur. Such individuals should still be the subject of mitigation and discussion, but in EIA and public health terms the effect may not be a significant population health change."

1.1.37 When comparing the DM and DC scenarios the modelling in other ES chapters that informs the health assessment has appropriately taken into account population and dwelling count changes due to permitted developments within their zones of influence.

## Significance Criteria

1.1.38 The assessment of health significance in EIA is an informed expert judgement about what is important, desirable or acceptable for public health with regards to changes triggered by the Proposed Amendments. These judgements were: value dependant (underpinned by scientific data, but also informed by professional perspectives); and are context-dependent (judgements relate to relevant social, economic and political factors) (European Commission, 2017).

1.1.39 This section sets out the methods for assessment of any likely significant population health effects of the Proposed Amendments.

1.1.40 The generic scheme-wide approach to the assessment methodology is set out in **Chapter 3**. Here the generic approach is refined to address the specific needs of the EIA health assessment. Namely criteria for sensitivity, magnitude and significance that inform a professional judgment and reasoned conclusion as to the public health implications of the Proposed Amendments.

1.1.41 Where significant adverse population health effects are identified, including for vulnerable groups, then mitigation has been proposed to avoid or reduce the effects. Mitigation is secured as part of the Proposed Amendments design or development consent. In line with good practice the Proposed Amendments also take a proportionate approach to identifying opportunities to enhance beneficial population health effects, including for vulnerable groups.

1.1.42 The following terminology is also used to consistently classify effects:

- Beneficial – effects that have a positive influence on receptors and resources;
- Adverse – effects that have a negative influence on receptors and resources;
- Temporary – effects that persist for a limited period only (due for example, to particular activities taking place for a short period of time);
- Permanent – effects that result from an irreversible change to the baseline or which persist for the foreseeable future;
- Direct – effects that arise from the impact of activities that form an integral part of the scheme (e.g. direct employment and income generation);
- Indirect – effects that arise from the impact of activities that do not explicitly form part of the scheme (e.g. off-site infrastructure upgrades to accommodate the development);
- Secondary – effects that arise as a consequence of an initial effect of the scheme (e.g. induced employment elsewhere); and
- Cumulative – effects that can arise from a combination of different effects at a specific location or the interaction of different effects over different periods of time.

## Assumptions and Limitations

1.1.43 All decision making is within the context of imperfect information and therefore uncertainty. Reducing uncertainty is a key element of Impact Assessment. Whilst not all uncertainty can be removed, the following steps have been taken to allow confidence in the EIA health assessment conclusions:

- Methods are used that triangulate evidence sources and professional perspectives;
- The scientific literature reviews undertaken give priority to high quality study design, such as systematic reviews and meta-analysis, and strength of evidence;
- Quantitative inputs for other assessments have been used, which included model validation, as described in other chapters;
- The health assessment has been cautious, with conservative assessments, for example in taking account of non-threshold effects and vulnerable group findings;
- Monitoring and adaptive management is conditioned as part of ongoing compliance; and
- The health assessment has been transparent in its analysis and follows good practice.

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