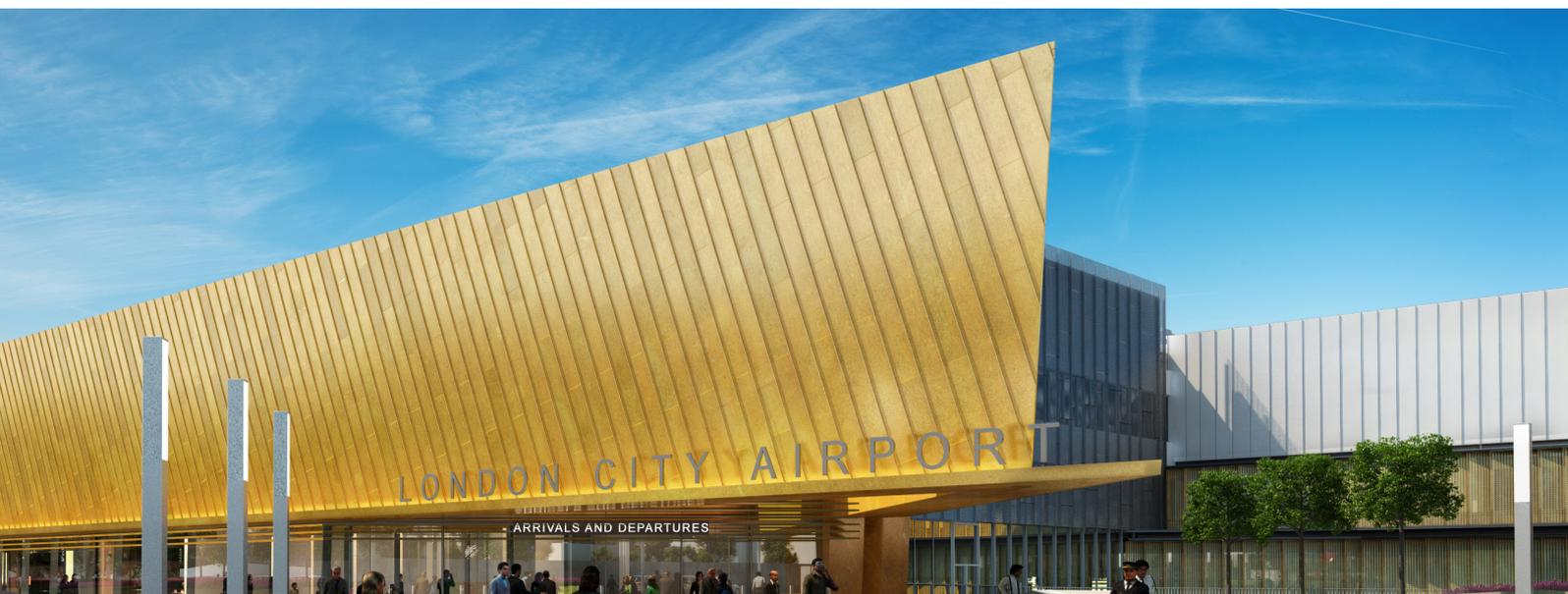


CITY AIRPORT DEVELOPMENT PROGRAMME (CADP)

# CADP: UPDATED HEALTH IMPACT ASSESSMENT

SEPTEMBER 2015

**London City Airport**  
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## Executive Summary

This Updated Health Impact Assessment (HIA) has been updated to take into account of changes within the Updated Environmental Statement (UES, September 2015) and context since the original HIA was prepared in conjunction with the planning applications for the City Airport Development Programme (CADP) in July 2013.

The scope, focus, assessment outputs and conclusions do not materially change from the original HIA or its subsequent Addendum of May 2014. The HIA Addendum was prepared in response to a request from the London Borough of Newham (Regulation 22 letter of 23<sup>rd</sup> May 2014) for further information on the health effects of noise (including annoyance; night time construction noise and possible sleep disturbance; and, cardio-vascular effects) with reference to established Government standards and scientific research. Additionally, in the intervening period, certain research has been published on the health consequences of air quality and noise in London.

All relevant further information on these matters is now contained in this UHIA and/or incorporated into Chapter 8: Noise and Vibration and Chapter 9: Air Quality of the UES. As such, these documents supersede the previous versions, thereby allowing the reader to review all health related effects of the CADP in an up-to-date suite of documents.

Consistent with the approach adopted in the UES, the original text from the HIA and HIA Addendum are presented here in black font, whilst any necessary updates are provided in light blue.

This UHIA confirms that the proposed CADP does not constitute a significant risk to local community health, on the basis that all regulatory environmental standards set to protect health are predicted to be achieved, and the relative effects of the predicted minor changes in air quality, noise and transport upon existing burdens of health are not sufficient to quantify any significant adverse health outcome. Moreover, when accounting for the underlying factors defining local influences on poor health in and surrounding the area (largely socio-economic and lifestyle related), and the direct, indirect and induced socio-economic benefits from the proposed CADP, coupled with the committed and ongoing community support and employment initiatives managed by the Airport to optimise local health benefit uptake, the proposed CADP is considered to represent a net health benefit.

The socio-economic impacts of the CADP are summarised within this UHIA and described more fully in UES Chapter 7: Socio-economics, Community and Recreation, whilst the Airport's current community support and employment initiatives are described within the Health Action Plan (HAP) presented at the end of this document, with recent updates denoted in blue.

This UHIA considers the proposed minor changes to the CADP, as described in UES Chapter 2: Site Context and Scheme Description, and finds that these have no bearing on the conclusions or any other aspect of this report. Similarly, the UHIA also considers the 'Single Phase Development (Accelerated Construction) Sensitivity Test' as reported in UES Appendix 6.6, and concludes that such a scenario would have a negligible effect.

A separate Updated Equalities Impact Assessment (EqIA) prepared by Quod (September 2015) is attached to this UHIA at Appendix B. This provides the commensurate information to assist the London Borough of Newham (LBN), and the Secretary of State and Planning Inspector appointed by the Secretary of State, in considering their public sector equality duty as set out in the Equality Act 2010. It concludes that the CADP would not have a negative impact on equalities and would instead have only neutral or positive outcomes.

# 1 Introduction

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## Background

- 1.1 In keeping with best practice, a voluntary Health Impact Assessment (HIA), including elements of Equalities Impact Assessment (EqIA), was commissioned to inform and support the initial planning application for the proposed City Airport Development Plan (CADP), submitted July 26<sup>th</sup> 2013.
- 1.2 Following the submission of the planning application, on 23<sup>rd</sup> May 2014 the London Borough of Newham (LBN) made a request for 'further information' in accordance with Regulation 22 ("Further information and evidence respecting environmental statements") of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011.
- 1.3 The Environmental Statement Second Addendum (ESSA, May 2014) was prepared to respond to each matter raised in this Regulation 22 request. In addition, written clarification and supplemental information was also provided in response to the other matters raised by LBN at this time. In particular, Part 2 Items 1-5 of LBN's letter ("Non Regulation 22 Additional Information / Clarifications") requested supplemental information in regards to the health effects of noise (including annoyance; night time construction noise and possible sleep disturbance; and, cardiovascular effects) as well as cumulative effects of other major developments in proximity to the Airport. These matters were responded to in the ESSA, with corresponding additional information provided in the standalone HIA Addendum (May 2014).
- 1.4 No further information or clarifications on the HIA were sought by LBN in its subsequent Regulation 22 request of 20<sup>th</sup> August 2014 and it was therefore not considered necessary to update the HIA in conjunction with the Consolidated Environmental Statement (CES) and Consolidated Environmental Statement Addendum (CESA) which were submitted to LBN in November 2014.
- 1.5 In view of the forthcoming Planning Inquiry, the Airport has taken the opportunity to update the CES to take account of the passage of time since the original ES was prepared in 2013 and also:
  - a) The availability of baseline data for the full calendar year of 2014 (to replace the 2012 data used in the CES, which would be nearing 4 years old by the time of Inquiry);
  - b) The preparation of Updated Forecasts (aircraft movements and passengers) for a future 'Principal Assessment Year' of 2025; with intervening assessment years of 2020 and 2023; and
  - c) Some changes to policy and legislation which have occurred since the CES was prepared.
- 1.6 In light of these updates to the UES, and especially the health dependent topics of socio-economics, noise, air quality and transport, it was considered appropriate to also update the HIA

at this juncture in order to reflect the corresponding revisions to the technical assessments set out in the UES chapters.

- 1.7 Accordingly, this Updated Health Impact Assessment (UHIA) reflects the findings of the UES and should be read alongside that document. In addition, where appropriate, the UHIA updates the assessment protocols and community profile to account for any material change in the available evidence base, or change in population demographic / sensitivity from the original HIA submitted in 2013. However, as stated above, the scope, focus, assessment outputs and conclusions do not materially change from the original HIA or its subsequent Addendum.

## Health Impact Assessment Process

- 1.8 HIA is a multidisciplinary process designed to identify and assess the potential health outcomes (both adverse and beneficial) of a proposed project, plan or programme and to deliver evidence-based recommendations that maximise health gains and reduce or remove potential negative impacts or inequalities<sup>1</sup>.
- 1.9 Although not a statutory requirement of the UK planning process, there is a sector-specific requirement through the Aviation Policy Framework<sup>2</sup> and an expectation from the London Borough of Newham<sup>3</sup>, to investigate and address potential impacts from airport developments upon local communities, their health and wellbeing.

## Approach

- 1.10 The basis and principles of this UHIA, which has been prepared in accordance with current guidance<sup>1</sup>, are set on a broad socio-economic model of health that encompasses conventional health impacts such as communicable disease, accidents and risk along with wider determinants of health vital to achieving good health and wellbeing. These wider determinants of health include income, employment, housing, education, the quality of the urban environment, crime and the perception of crime.
- 1.11 In this instance, the original HIA also integrated elements of Equalities Impact Assessment (EqIA), to ascertain if aspects of the proposed CADP have a disproportionate impact upon specific sensitive community groups, and to establish the requirement for any further assessment. Following the original HIA, a separate Equalities Impact Assessment (EqIA) was prepared in order to inform the decision maker about the impact of the CADP proposals on different socio-demographic groups. The findings of this assessment, which reinforce those of the HIA, are reported in the full Updated EqIA attached at Appendix B.

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<sup>1</sup> Kemm J and West Midlands Public Health Observatory. (2007). Critical Guide to HIA. Available at [www.apho.org.uk/resource/item.aspx?RID=44422](http://www.apho.org.uk/resource/item.aspx?RID=44422) last accessed 15/07/13.

<sup>2</sup> Aviation Policy Framework. (2013). Presented to Parliament by the Secretary of State for Transport by Command of Her Majesty. March 2013. Cm 8584. Available at [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/153776/aviation-policy-framework.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/153776/aviation-policy-framework.pdf) last accessed July 2013

<sup>3</sup> London Borough of Newham. (2012). Newham's Local Plan - the Core Strategy. Adopted Version January 2012. Paragraph 6.19. Page 91. Available at <http://www.newham.gov.uk/Documents/Environment%20and%20planning/Core%20Strategy%2004-13%20Final%20LR.pdf> last accessed 15/07/13.

- 1.12 A key aspect of the HIA approach has been to work alongside, draw from and build upon the technical assessments contained within the CADP Environmental Statement (ES), [now updated by the UES](#).
- 1.13 Integration with the planning and EIA process has enabled the consideration of potential health pathways ([particularly air quality, transport, noise and socio-economic disciplines](#)) to iteratively inform the development of the proposed CADP and this [UHIA](#). The [UHIA](#) has tracked and accounted for refinements to the CADP proposals, ensuring that it is informed by the final predicted changes in environmental and socio-economic conditions directly attributable to the proposed CADP.

### **Aim and objectives**

- 1.14 The primary aim of the [UHIA](#) has been to build upon and complement the outputs of the [UES](#) to further integrate health and wellbeing within the proposed CADP, to identify and assess potential health outcomes and to put forward recommendations to optimise health gains whilst minimising potential negative impacts and inequality.
- 1.15 This aim has been achieved through the following:
1. HIA scoping to establish, justify and agree an appropriate scope and focus of assessment with key stakeholders;
  2. community profiling to establish local circumstance and relative sensitivity, forming the founding platform to the assessment process;
  3. iterative HIA support to address local circumstance and community health concerns through the refinement of the proposed CADP;
  4. quantifying and appraising the magnitude, distribution and likelihood of potential health outcomes (both adverse and beneficial) directly attributable to the proposed CADP;
  5. development of a Health Action Plan (HAP) to further address local circumstance, support the uptake of potential health benefits and inform on-going community engagement and feedback;
  6. [responding to the 'Regulation 22' request from LBN and the provision of further information in the form of the HIA Addendum \(May 2014\); and](#)
  7. [through the provision of this UHIA, consolidating all previous HIA information, updating the assessment information, and accounting for any changes to the health evidence base, population demography and relative sensitivity.](#)

### **Methodology**

- 1.16 Although guidance and a generic HIA process exists, the methods employed in HIA are often tailored to meet the particular assessment requirements of a project. In this instance, the HIA has been run parallel with the Environmental Impact Assessment, drawing from technical outputs

and integrating key stages of community and stakeholder engagement. Core stages of the HIA include:

1. HIA Scoping;
2. Project Profile;
3. Community Profile;
4. Stakeholder Engagement;
5. Assessment; and
6. Conclusion, Recommendations and Health Action Plan.

1.17 Each of these stages is described below.

### **Scoping Exercise**

1.18 Scoping is the process by which the focus of the HIA is set, defining the key health pathways to be assessed (i.e. aspects with the potential to influence health, both adversely and beneficially); and, just as importantly, rationalise aspects to be outside of the scope. This is necessary to ensure the HIA is fit for purpose, meets stakeholder expectations and identifies potential opportunities to support local and strategic health objectives, but does not cover matters that the HIA cannot influence.

1.19 The scope of the HIA was initially defined through a review of the available project information and health literature, and then refined through the formal EIA Scoping Opinion from LBN and the response of statutory consultees. It was further developed by a formal HIA scoping exercise (November to December 2012) and through feedback from key health stakeholders. A copy of the HIA Scoping Document is presented at Appendix A.

1.20 During the development and refinement of the proposed CADP a number of changes to the planning strategy have ensued, including the separation of elements of the proposed CADP into two different planning applications - [CADP1 relating to the proposed infrastructure and new passenger facilities \(ref. 13/01228/FUL\)](#) and [CADP2 relating to outline permission for the proposed Hotel \(ref. 13/01373/OUT\)](#). These changes did not alter the scope and focus of the HIA process, nor did the feedback received on the submitted HIA, its subsequent Addendum and the various requests from LBN for further information in accordance with Regulation 22 of the EIA Regulations 2011.

### **Project Profile**

1.21 The project profile draws from the planning application, the [UES](#) and available literature to outline the core activities and associated health pathways to be investigated in greater detail within the assessment stage. A health pathway can be described as the way in which an activity influences a known determinant of health. As an example of how the health pathway concept is applied, construction activities are known to influence environmental determinants of health including air

quality, noise and traffic. A health pathway is identified when such influences have the opportunity to impact on communities with the potential to cause a response or health effect.

- 1.22 Identification of potential health pathways helps to define the scope of the study, from which it is possible to develop a suitable evidence base and a more informed community profile. The distribution, magnitude and significance of the health pathways are then investigated within the assessment stage.

### **Community Profile**

- 1.23 Evidence suggests that different communities have varying susceptibilities to health impacts and benefits as a result of social and demographic structure, behaviour and relative economic circumstance<sup>4</sup>. A community profile therefore not only forms the basis to exposure response modelling, but also provides a means to consider how potential health pathways identified in the project profile might act disproportionately upon certain communities and sensitive groups. In this instance, the community profile makes use of available demographic and healthcare data, complementing the socio-economic profile given in Chapter 7 of the [UES](#).

### **Stakeholder Engagement**

- 1.24 An important component of gathering an appropriate evidence base and tailoring the HIA to local circumstance is seeking the views of stakeholders and key representatives of communities likely to be affected by the proposed CADP. In this instance, an integrated engagement strategy was applied [from the onset of the project](#) to engage and catalogue community and stakeholder concerns, providing informed feedback at exhibitions, and a mechanism to both refine the proposed CADP to address such concerns through design, and influence the scope and focus of the final assessment.
- 1.25 Engagement has been delivered through an integrated strategy, applied to inform:
1. the refinement of the proposed CADP;
  2. the project profile, to guide and further refine the scope and focus of the HIA the [UHIA](#);
  3. the community profile, aiding the identification and discussion of local health priorities, perceptions and concerns;
  4. the assessment protocols and evidence base applied; and
  5. the development and refinement of the Health Action Plan.
- 1.26 Section 4 of the [UHIA](#) provides a brief summary of engagement stages and outputs pertinent to the [UHIA](#). However, for a more detailed account of the integrated consultation strategy, the methods applied, the stakeholders and communities engaged and the consultation outputs, the reader should refer to the full Statement of Community Involvement (SCI) (June 2013) report submitted with the planning applications.

<sup>4</sup>

Kemm J and West Midlands Public Health Observatory. (2007). Critical Guide to HIA. Available at [www.apho.org.uk/resource/item.aspx?RID=44422](http://www.apho.org.uk/resource/item.aspx?RID=44422) last accessed 15/07/13.

## **Assessment**

- 1.27 The assessment stage maps the project profile and technical outputs of the **UES** against the community profile to assess and appraise the magnitude, likelihood and distribution of potential health outcomes (both adverse and beneficial) that would be directly attributable to the proposed CADP.
- 1.28 To keep the **UHIA** a concise and publicly-accessible document, the assessment draws upon the technical assessment outputs of the **UES** but does not seek to repeat or replicate them. Key inputs are, however, cross referenced with the **UES** to aid transparency.

## **Health Action Plan (HAP)**

- 1.29 The HAP expands upon the normal recommendations section within HIA guidance <sup>5</sup>, establishing recommended protocols and monitoring regimes to be implemented to further reduce and remove potential negative health impacts while maximising opportunities to increase health benefits. In this instance, the HAP draws from and builds upon the mitigation outlined in the **UES** and **provides an update as to** Airport community support initiatives which are tailored to local circumstance and needs.

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<sup>5</sup>

Kemm J and West Midlands Public Health Observatory. (2007). Critical Guide to HIA. Available at [www.apho.org.uk/resource/item.aspx?RID=44422](http://www.apho.org.uk/resource/item.aspx?RID=44422) last accessed 15/07/13.

## 2 Project Profile

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### Introduction

- 2.1 This section draws from the description of the proposed CADP detailed in the [UES](#), and sets the scope of potential health pathways to be investigated. For the sake of brevity, the HIA does not seek to repeat the full description of the proposed CADP, but outlines the key aspects and the associated health pathways. For further details of the proposed CADP, the reader should refer to the [Scheme Description provided in Chapter 2 of the UES](#).

### Site Context and Scheme Description

#### Site Location and Setting

- 2.2 London City Airport is located between the Royal Albert Dock and King George V Dock within the London Borough of Newham, east London. Figure 2.1 illustrates the current layout of the airport.
- 2.3 The application site for CADP 1 extends to 60.1 hectares and includes the existing airport boundary and areas outside (principally to the south) required for the implementation of the proposed CADP. CADP1 overlaps with the application site for the proposed Hotel (CADP2) to ensure integration between the two proposals.
- 2.4 As detailed in the planning application description and illustrated by Figure 2.2 and Figure 2.3, the Airport seeks full Planning Permission from LBN for new and upgraded aircraft stands, an extension to the taxilane running adjacent to the runway, a new extended Terminal, reconfigured Forecourt area and related infrastructure works. The CADP1 application proposals will allow the Airport to meet increasing regulatory standards, accommodate a new generation of larger, more fuel efficient aircraft, and improve the facilities and experience of passengers using the Airport. It will also enhance the operational efficiency and passenger capacity of the Airport in accordance with current and future customer, airline and regulatory requirements.
- 2.5 The proposed CADP does not seek to increase the permissible number of aircraft movements or noise factored movements (both currently 120,000 per annum), nor will there be any change in operational hours or other conditions by which the Airport currently operates.
- 2.6 [Outline Planning Permission was also sought at the same time](#) for the erection of a Hotel opposite the Western Extension on Hartman Road. [This received resolution to grant from the London Borough of Newham on 3<sup>rd</sup> February 2015 and outline planning permission is expected to be granted later in 2015. This application is described as](#) comprising up to 260 bedrooms, ancillary flexible A1-A4 floor space (retail /restaurant/bar) at ground floor, meeting/conference facilities together with associated amenity space, landscaping, plant and ancillary works.

**Figure 2.1 Current Aerial View of London City Airport (looking east)**



Figure 2.2 Planning Application Redline Boundary and Existing Airport Layout

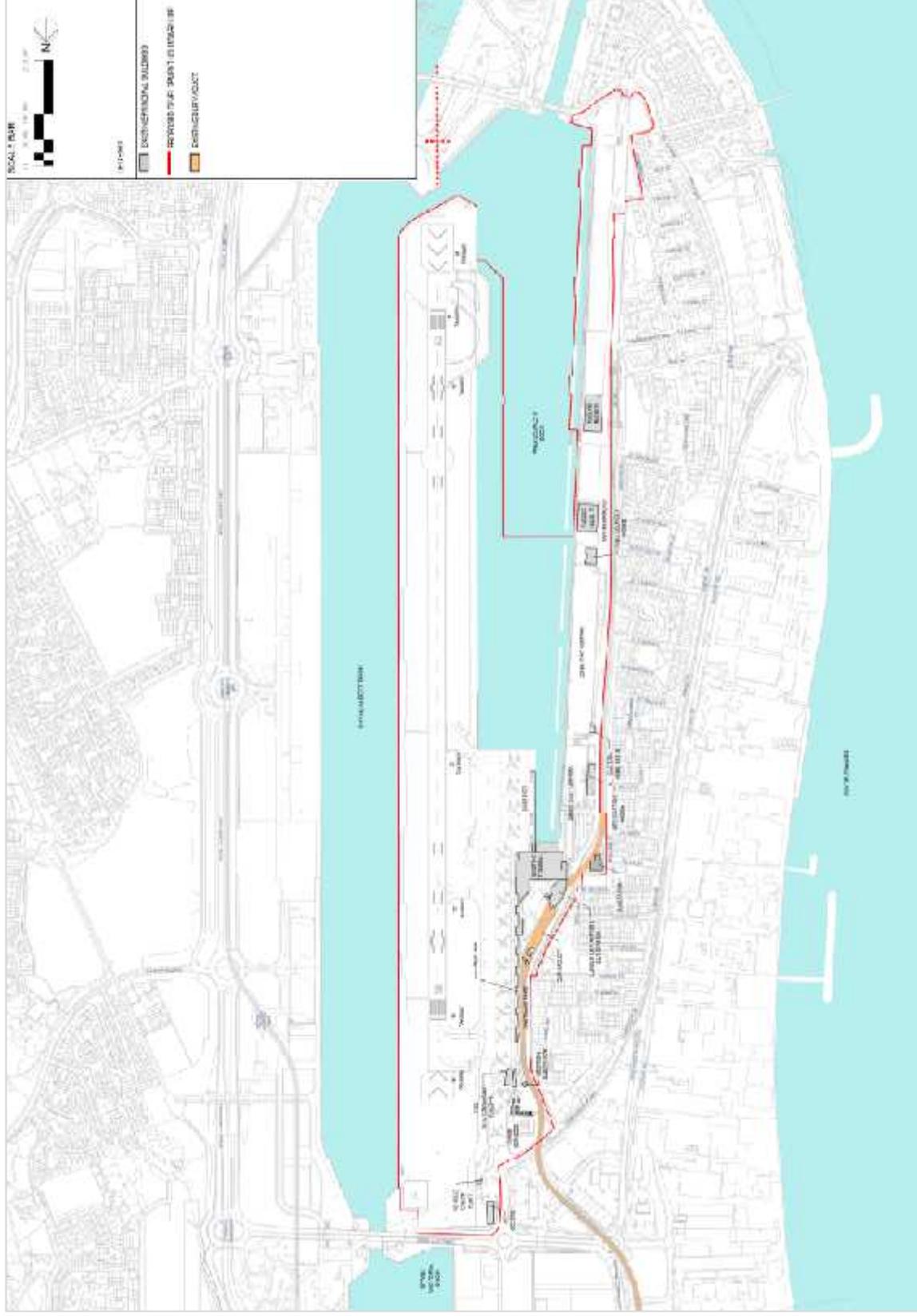


Figure 2.3 Planning Application Redline Boundary with the Proposed CADP



## **Proposed Minor Changes**

- 2.7 Since the submission of the original CADP1 planning application, the Airport has identified an opportunity to incorporate minor design changes to the Western Terminal Extension (WTE) and Out Bound Baggage (OBB) facility, as described below.

### Western Terminal Extension (WTE)

- 2.8 The Airport has reviewed the design of the WTE and considers that the CADP building works can be undertaken with significantly less encroachment into the DLR Safeguarded Zone, without having a detrimental impact on future operation or design of the building. It is therefore proposed to pull back from the Zone the oversail of the upper storeys of the WTE, resulting in a circa. 304m<sup>2</sup> reduction in the floor area of the WTE (a 5.3% decrease overall).
- 2.9 This, in turn, very slightly alters the appearance of the building when viewed from the south west. The main change is in the location and extent of glazing, with the oblique extent of glazing to the WTE's south facade being replaced by a double-height section of glazing. However, the approach to materials, composition, lighting, and colour all remain unchanged to those shown previously.

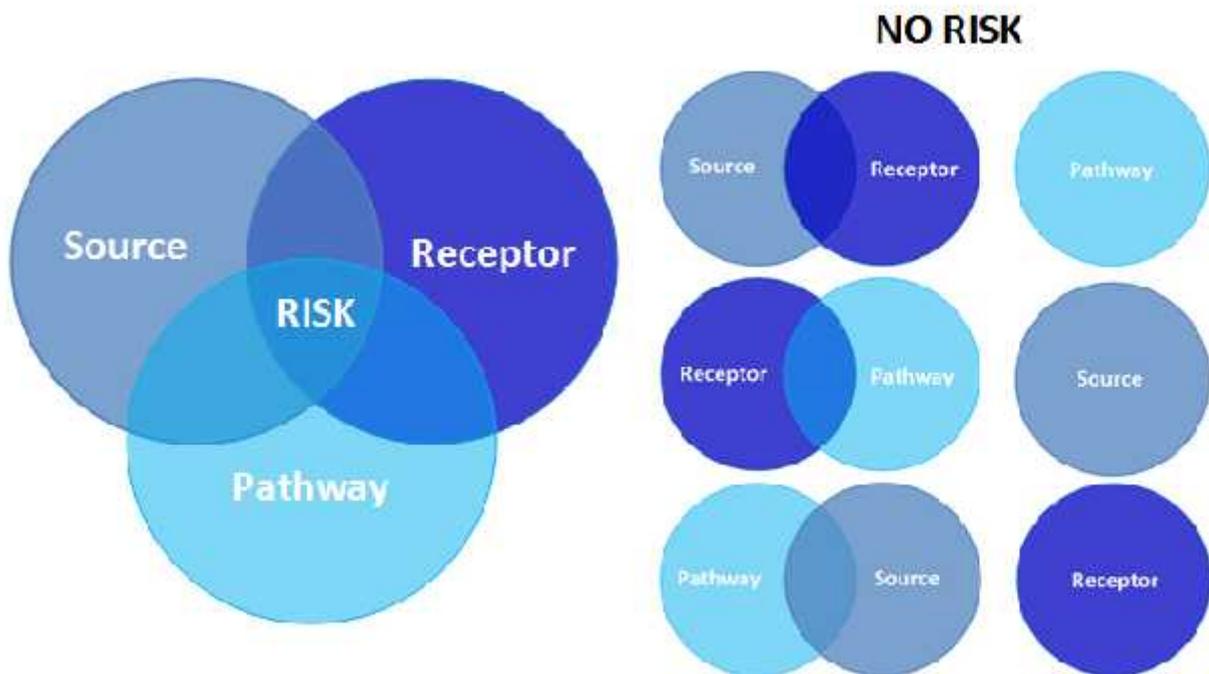
### Outbound Baggage (OBB) Deck

- 2.10 The outbound baggage (OBB) deck provided as part of the Facilitating Works is proposed to be extended by 10 m to the east. The change involves delivering earlier than originally proposed a 10m section of deck for emergency vehicle access immediately to the east of the proposed Temporary OBB Extension. This deck area is now proposed to be built in the first phase of CADP as opposed to the originally programmed second phase.
- 2.11 The earlier delivery of this small section of deck would not have any material effect on the construction programme but results in a slight extension of around 1 week to that particular activity. This change has therefore been accounted for in the *Updated Construction Programme* described in UES Chapter 6: Development Programme and Construction.
- 2.12 These proposed minor changes (should they be permitted) would not give rise to any new or materially different environmental effects or health pathways (i.e. activities with the potential to influence community health) to those previously reported in the original HIA or the Addendum to the HIA.

## **Health Pathways**

- 2.7 The assessment of health follows a hazard source-pathway-receptor concept to establish and assess the potential risk to health, and its wider determinants directly attributable to a proposed project.
- 2.8 As shown in Figure 2.4, a hazard by itself does not constitute a risk, it is only when there is a hazard source, a receptor and a pathway of exposure before there is any potential for risk to health.

Figure 2.4: Assessing Risk through the Source-Pathway-Receptor Concept



- 2.9 Where a source-pathway-receptor linkage exists, it is then the nature of the specific hazard source, and the magnitude and concentration of exposure that will define what that risk is.
- 2.10 The identification of potential health pathways helps to define and rationalise the scope of the assessment, from which it is possible to develop an appropriate evidence base and an informed community profile. The distribution, magnitude and significance of potential health pathways are then investigated in the assessment section.

### Construction

- 2.11 As described in UES Chapter 6, the proposed construction methodology and likely sequence of works for the CADP is illustrated by the *Updated Construction Programme* (presented at Appendices 6.1 and 6.2 of the UES). This replicates the *Improved Construction Programme – August 2014* assessed previously, with the exception that the likely construction programme has been projected forward by some 18 months to account for the delayed start of construction due to the appeal process.
- 2.12 The *Updated Construction Programme* comprises a 6.5 year, two-phase programme containing a 6 months period of 'respite' between the two phases, and spanning 7 calendar years overall. Initial stages (Year 1–2) include the partial construction of the eastern taxilane and three new Code C compliant stands on a new deck over King George V Dock. The temporary "Facilitating Works" for this infrastructure comprise an extended outbound baggage (OBB) handling facility, a new Coaching Facility to serve the three stands, and a noise barrier.

- 2.13 The new stands, taxilane and Facilitating Works are now expected to be complete by 2018 (Year 2) in order to meet the short term/ critical requirements of the Airport and airlines. During this time, the first phases of the Western Terminal Extension (WTE) and the Western Energy Centre will also be developed. The remainder of the proposed CADP will be built out progressively over the following four years (Years 3-6). The full CADP works are anticipated to be complete and fully operational by the beginning of 2023 (Year 7).
- 2.14 The construction programme and techniques to be applied build upon the previous eastern dock expansion experience, implementing tried and tested methods that minimise/manage environmental impacts and potential disruption/annoyance to local communities, and cause minimal disruption to local businesses reliant on the operation of the Airport.
- 2.15 As detailed in Chapter 6 of the UES, the assessment sections of the UES and UHIA adopt a conservative approach by applying the 'peak year' of construction (Year 3) on the basis that this is likely to represent the 'worst case' period for potential impacts on sensitive receptors within and around the Airport, including local residents, passengers and members of the public. However, it should be noted that the noise assessment, detailed in Chapter 8 of the UES, considers night time noise throughout the entire construction programme based on three monthly timeslices. Furthermore, under the Accelerated Construction Programme the peaks in construction activity would occur at a different time, resulting in the likely 'worst case' year being brought forward to Year 2 (see Appendix 6.6 of the UES for further details).
- 2.16 As detailed in Chapter 6 of the UES, the construction working hours of the proposed CADP will be limited by the operational hours and activities of the Airport, and certain essential construction works will be performed at night and during the 24 hour weekend period when the Airport is closed. This is particularly relevant to piling and other activities close to the runway and those which require working at height within the transitional areas. It is noted that the significant improvements have already made to the construction methodology and sequence of works (as reported in the CES and CESA of November 2014) which includes a substantial reduction in Out of Operational Hours (OOOH) working compared to the construction programme presented and assessed in the original July 2013 ES.
- 2.17 All elements of the construction beyond the transitional surface and operational areas of the Airport (e.g. the surface car parking, Hotel and Eastern Energy Centre) would take place during normal day-time hours (8.00 to 19:00). Any planned abnormal activities outside of these core hours will be agreed with LBN.
- 2.18 As detailed in Chapter 7 of the UES, it is estimated that 355 Full Time Equivalent (FTE) direct onsite construction jobs will be supported over the life of the project, with a further 106 indirect and induced FTE jobs, making a total of 461 FTE jobs (excluding the construction impact of the Hotel).
- 2.19 Wherever practical, the workforce will be sourced from the local area to maximise the uptake of socio-economic benefits and further minimise transport requirements. Construction materials and equipment will be delivered both by road and river to minimise congestion and disruption during peak transport hours to communities and travellers alike.

## Accelerated Construction Programme

- 2.20 A sensitivity test has also been included at Appendix 6.6 of the UES to consider a scenario where, should circumstances dictate, the CADP is built out in a single phase over 5 years. Under this *Accelerated Construction Programme* all 7 proposed new stands could be delivered and utilised by 2020, rather than in 2022 under the *Updated Construction Programme*.
- 2.21 UES Appendix 6.6 concludes that that no new or materially different significant environmental effects would occur under this *Accelerated Construction Programme*, either during the construction process or once the new infrastructure is fully utilised in 2020. This UHIA draws the same conclusion as no new or additional health impacts are predicted to occur under this scenario.

## Construction Health Pathways

- 2.22 Potential health pathways associated with the construction of the proposed CADP are primarily environmental, including localised changes in air quality, noise and surface transport during the construction period, with wider socio-economic pathways associated with direct, indirect and induced income and employment opportunities. Wider health pathways are associated with general community disruption (noise, dust and transport) in close proximity to construction areas. [The construction health pathways have not changed from the original HIA.](#)

## Operation

- 2.23 Once operational, the provision of new passenger facilities and infrastructure will enable the Airport to meet increasing regulatory standards, respond to forecast growth in passenger numbers (particularly at peak periods) and accommodate new generation aircraft which are physically larger than the current fleet, and offer improvements in fuel efficiency, noise emissions and other operational benefits.

## Operational Health Pathways

- 2.24 Potential health pathways associated with the operation of the proposed CADP include changes in passenger throughput and associated surface movements along new access points and parking/taxi drop off facilities (i.e. changes in air quality, noise and risk from road traffic accident and injury). The CADP will also lead to changes in air noise, ground noise and emissions, largely due to the realignment and provision of new infrastructure and the uplift of aircraft movements facilitated by this new infrastructure. Wider socio-economic health pathways are associated with Airport enhanced capability and service, securing and expanding business, tourism and facilitating social and recreational activities. [The operational health pathways have not changed from the original HIA.](#)

## Equalities Impact Assessment

- 2.25 Construction and operational health pathways have the potential to have a disproportionate impact upon existing burden of poor health and relative socio-economic deprivation, with some particular sensitivity to changes in noise within specific age groups. Such community groups and relative sensitivity to specific health pathways are accounted for within the following assessment and further

addressed within the Health Action Plan.

- 2.26 The construction and operation of the proposed CADP does not present any disproportionate impact upon sex, race, ethnicity, religion, sexual orientation or sexual preference. On this basis, no further assessment was deemed necessary in this UHIA, as relative sensitivity associated with socio-economic status and existing burdens of poor health have been accounted for (see Community Profile section below).
- 2.27 A full EqIA was prepared by Quod in December 2014 in response to a request from the London Borough of Newham (LBN). This has been updated to take into account updated information in the UES and is provided in Appendix B. The findings of the full EqIA reinforce that of the original HIA.

## Tailoring the UHIA to the Project Profile

- 2.28 Table 2.1 provides a summary of the potential health pathways associated with the proposed CADP and represents the scope of health topics to be addressed as part of the UHIA.

**Table 2.1: Health Pathways**

Feature	Health Pathway	Health Determinant	Potential Implication	Distribution
Construction Phase	Changes to local air quality	Environment	Adverse	Local
	Changes in noise exposure	Environment	Adverse	Local
	Changes in local transport nature and flow rates	Transport	Adverse	Local
	Increased direct, indirect and induced employment opportunities	Socio-economic	Beneficial	Local
Operational Phase	Direct, indirect and induced income employment opportunities	Socio-economic	Beneficial	Local/Regional
	Changes in noise exposure	Environment	Adverse	Local
	Changes in local road transport nature and flow rates	Transport	Adverse	Local
	Changes to local air quality (emissions to air)	Environment	Adverse	Local/Regional

- 2.29 On the above basis, it was determined that the following matters should be taken forward to the full assessment stage:
1. quantitative exposure response modelling for changes in PM<sub>10</sub>, PM<sub>2.5</sub> and NO<sub>2</sub> exposure during construction and operation (applying the UK Department of Health's Committee on the Medical Effects of Air Pollutants (COMEAP) methodology) to quantify potential changes in life expectancy and local cardiovascular and respiratory hospital admissions);
  2. risk assessment from changes in construction and operational road traffic movements and subsequent risk of collisions directly attributed to the CADP;
  3. qualitative appraisal as to community disruption and potential health outcome from changes in construction and operational noise (drawing from the detailed noise assessment of the UES); and

4. qualitative appraisal as to the socio-economical health benefits from direct, indirect and induced income and employment opportunities (drawing from the socio-economic assessment within Chapter 7 of the [UES](#)).
- 2.30 [Neither the subsequent further information provided in the Addendum to the HIA \(May 2014\) nor the updated impact assessments presented in the UES change the health pathways to be assessed in this UHIA.](#)

## 3 Community Profile

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### Introduction

- 3.1 Evidence suggests that different communities have varying susceptibilities to both health impacts and benefits as a result of social and demographic structure, behaviour and relative economic circumstance. The UHIA has revisited the community profile, updating data where appropriate and available, and providing an insight into how potential health pathways identified within the project profile may act disproportionately upon certain communities and sensitive receptors.
- 3.2 The Community profile continues to make use of the most recent Census data (2011) and the Newham Joint Strategic Needs Assessment (2012), updated with the Public Health England (PHE) Newham Public Health Profile (2015), Nomis Labour Market Statistics and the Newham Health & Wellbeing Strategy (2014).

### Site Location and Setting

- 3.3 The Airport is located between the Royal Albert Dock and King George V Dock within the London Borough of Newham, east London. The site is situated in the Royal Docks ward bordered by Canning Town South, Custom House and Beckton wards to the north, and the Thames to the south.

### Local Demography

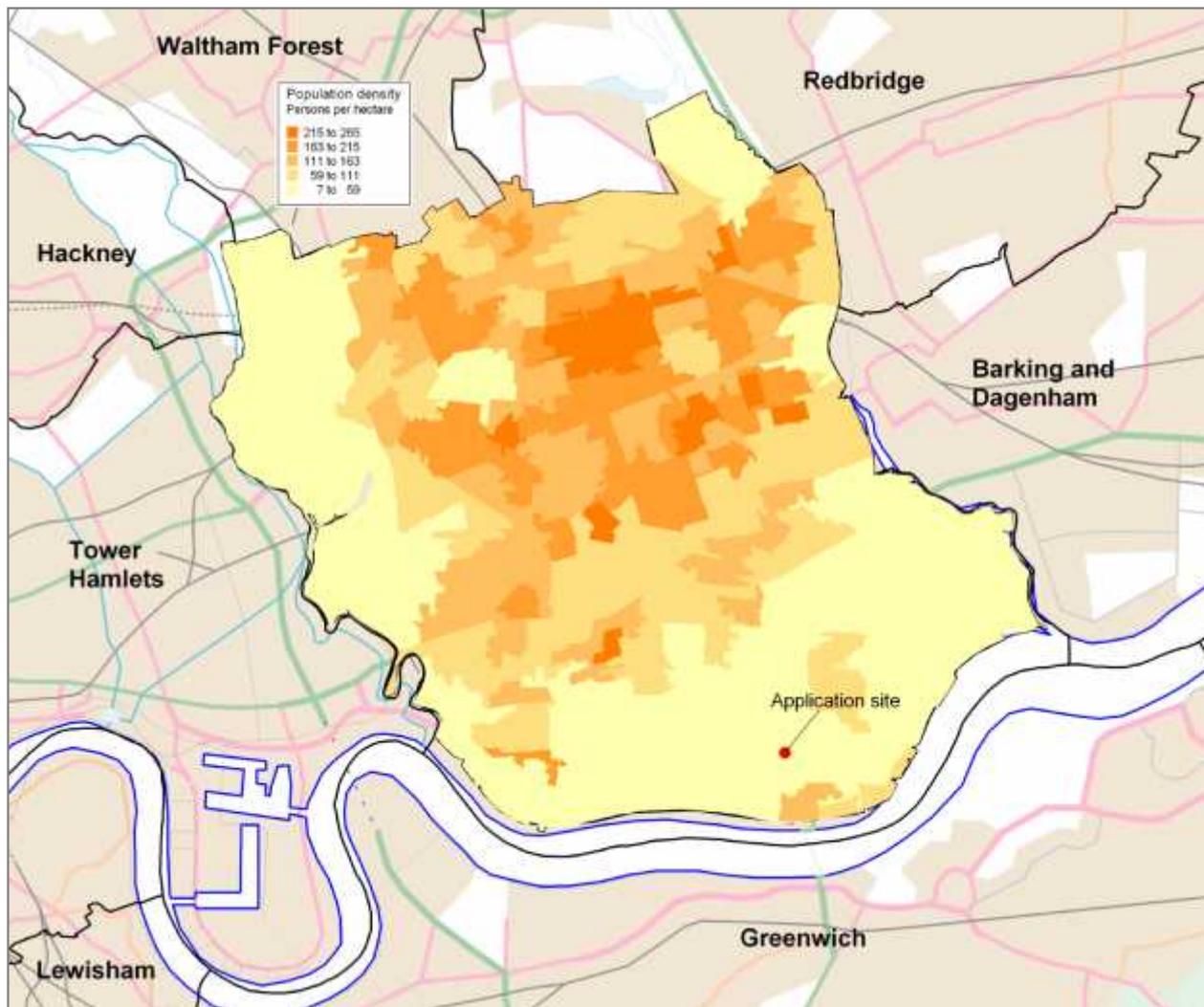
- 3.4 The 2011 census has shown the population of England to have increased since 2001 by nearly 3.6 million people to 53,012,456. Similarly over the last decade the population of Newham has also shown an increase in total population from 249,000 people in 2001 to 308,000 in 2011 (an increase of approximately 23.5%)<sup>6,7</sup>, and the second highest population growth for any local or unitary authority in England and Wales. The Office for National Statistics mid 2013 population estimate indicates this to have grown to 318,000<sup>15</sup>.
- 3.5 As shown in Figure 3.1, ONS 'small area statistics' derived from the national census indicate that overall London exhibits a population density of 45.62 people per hectare (pph), increasing to 67.34 in Newham.
- 3.6 However, such population density is not uniform throughout Newham, where as shown in Figure 3.1, higher population densities can be seen to the north of Newham around the Forest Gate, Upton Park and Green Street area, with significantly lower population densities in proximity to the Airport.

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<sup>6</sup> Office for National Statistics. (2011). 2011 Census: Residence Type, Local Authorities in England and Wales (QS101EW). Available at <http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcn%3A77-286348> last accessed 25/08/15.

<sup>7</sup> Office for National Statistics. (2011). 2011 Census: Population and Household Estimates for England and Wales, March 2011 (ONS Correction made 20 July 2012). Available at <http://www.ons.gov.uk/ons/rel/census/2011-census/population-and-household-estimates-for-england-and-wales/stb-e-w.html#tab-correction> last accessed 25/08/15.

Figure 3.1 Newham Population Density



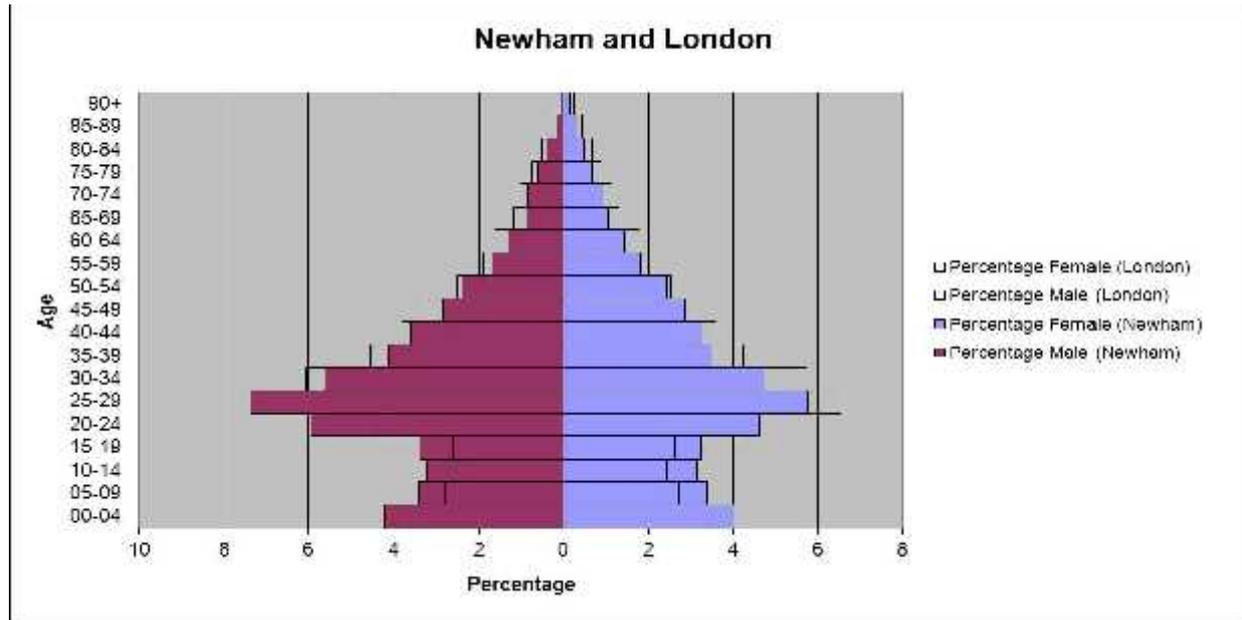
### Population Structure

3.7 The population of Newham has a young age demographic with a high proportion of adults and notably more males who are aged 30-44 years but also children aged 0-9 years, indicating a high percentage of young families<sup>8</sup>. As shown in Figure 3.2 and Figure 3.3, when applying the most recent 2011 Census data, this difference in demographic can be seen at both the national level, and when compared against the age profile for the rest of inner city London.

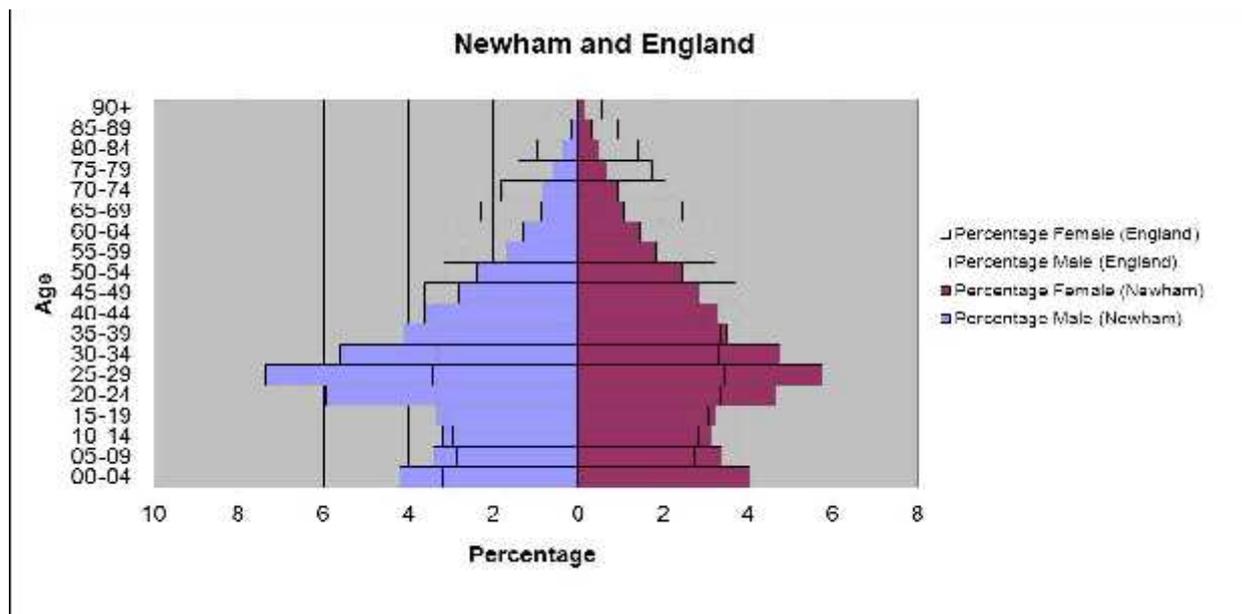
8

Office for National Statistics. (2011). 2011 Census: Age Structure (KS102EW). Available at <http://www.neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=7&b=6275177&c=newham&d=13&e=13&g=6334753&i=1001x1003x1004&o=362&m=0&r=1&s=1372786677020&enc=1&dsFamilyId=2474> last accessed 25/08/15.

**Figure 3.2 Newham and London Age Profile**



**Figure 3.3 Newham and England Age Profile**



3.8 Data from the Newham Joint Strategic Needs Assessment (JSNA) indicates that there is variation in the age profile at the ward level, the proportion of people aged over 65 ranges from 4.5% (Beckton) to 11.1% (Plaistow South) compared against the national average for England of 16.5%. Table 3.1 utilises data from the available JSNA, based on 2011 population projections to show the ward level age comparison<sup>9</sup>.

<sup>9</sup> NHS North East London and the City. (2012). Newham Joint Strategic Needs Assessment 2011/12: September 2012 Update. Available at <http://www.newham.gov.uk/Documents/Council%20and%20Democracy/JSNASept2012Update.pdf> last accessed 25/08/15.

**Table 3.1 Population Age Profile by Ward**

Area Name	Percentage Under 18	Percentage 18-64	Percentage 65 Plus
England	21.1	62.4	16.5
London	23.0	66.0	11.0
Newham	26.8	66.1	7.1
Beckton	22.7	73.2	4.1
Boleyn	28.3	63.3	8.4
Canning Town North	29.5	63.6	7.0
Canning Town South	28.1	63.4	8.5
Custom House	27.6	64.0	8.4
East Ham Central	28.5	64.6	6.9
East Ham North	30.5	63.7	5.8
East Ham South	33.5	58.4	8.1
Forest Gate North	25.1	68.0	7.0
Forest Gate South	23.3	71.4	5.3
Green Street East	28.9	64.3	6.8
Green Street West	26.8	65.6	7.7
Little Ilford	31.0	62.5	6.5
Manor Park	26.4	64.6	9.0
Plaistow North	27.3	64.9	7.87
Plaistow South	20.2	68.9	10.9
Royal Docks	22.1	72.8	5.1
Stratford and New Town	21.8	72.2	6.0
Wall End	30.4	63.3	6.3
West Ham	27.8	64.7	7.6

## Religion

- 3.9 The London Borough of Newham exhibits a high religious diversity compared against the national average, with a higher percentage of people stating their religion as Muslim (24% compared with 3.1% in England), Hindu (6.93% compared with 1.11% in England), and Sikh (2.83% compared with 0.67% in England).
- 3.10 Such a distribution is not however uniform within Newham, where, as shown in Table 3.2, the percentage of religions in the Royal Docks ward (location of Airport) is less diverse and closer resembles that to the London trend <sup>10</sup>.

10 Office for National Statistics. (2011). 2011 Census: Religion 2011 (QS208EW). Available at [www.neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=7&b=6505416&c=Royal+Docks&d=14&e=61&q=6335034&i=1001x1003x1032x1004&m=0&r=1&s=1372714495121&enc=1&dsFamilyId=2579](http://www.neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=7&b=6505416&c=Royal+Docks&d=14&e=61&q=6335034&i=1001x1003x1032x1004&m=0&r=1&s=1372714495121&enc=1&dsFamilyId=2579) last accessed 25/08/15.

**Table 3.2 Percentage of Religions Stated in the 2011 Census**

Religion	Royal Docks	Newham	London	England
Christian	53.89	39.98	48.42	59.38
Buddhist	1.03	0.79	1.00	0.45
Hindu	5.03	8.75	5.03	1.52
Jewish	0.19	0.11	1.82	0.49
Muslim	13.25	31.97	12.39	5.02
Sikh	0.77	2.08	1.54	0.79
Other Religion	0.36	0.35	0.59	0.43
No Religion	18.44	9.54	20.73	24.74
Religion Not Stated	7.05	6.42	8.47	7.18

## Ethnicity

3.11 As shown in Table 3.3, the **current** 2011 Census reflects the considerable ethnic diversity of Newham <sup>11</sup>.

**Table 3.3 Ethnic Group in Newham 2011**

Ethnic Group	Population	Percentage of Newham Population
White; English/Welsh/Scottish/Northern Irish/British	51516	16.7
White; Irish	2172	0.7
White; Gypsy or Irish Traveller	462	0.2
White; Other White	35066	11.4
Mixed/Multiple Ethnic Groups; White and Black Caribbean	3957	1.3
Mixed/Multiple Ethnic Groups; White and Black African	3319	1.1
Mixed/Multiple Ethnic Groups; White and Asian	2677	0.9
Mixed/Multiple Ethnic Groups; Other Mixed	3992	1.3
Asian/Asian British; Indian	42484	13.8
Asian/Asian British; Pakistani	30307	9.8
Asian/Asian British; Bangladeshi	37262	12.1
Asian/Asian British; Chinese	3930	1.3
Asian/Asian British; Other Asian	19912	6.5
Black/African/Caribbean/Black British; African	37811	12.3
Black/African/Caribbean/Black British; Caribbean	15050	4.9
Black/African/Caribbean/Black British; Other Black	7395	2.4
Other Ethnic Group; Arab	3523	1.1
Other Ethnic Group; Any Other Ethnic Group	7149	2.3

3.12 However, the population of Newham, in terms of ethnicity, varies substantially by age group. Of people aged less than 20 years of age, 20.7% of the population are black African and 16.5% are Bangladeshi. Of people aged 20-64 years, 15% of the population are black African and 8.7% are

11 Office for National Statistics. (2011). 2011 Census: Ethnic Group 2011 (QS208EW). Available at [www.neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=7&b=6275177&c=newham&d=13&e=13&g=6334753&i=1001x1003x1004&o=362&m=0&r=1&s=1372716877856&enc=1&dsFamilyId=2477](http://www.neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=7&b=6275177&c=newham&d=13&e=13&g=6334753&i=1001x1003x1004&o=362&m=0&r=1&s=1372716877856&enc=1&dsFamilyId=2477) last accessed 25/08/15

Bangladeshi. In contrast, 16% of the under 20s age range population are white, rising to 33% of the 20-64 age range population and 55% of 65 years and over population <sup>12</sup>.

- 3.13 Equally, ethnicity varies considerably within Newham, where available data indicates that the Royal Docks demonstrates a lower ethnic diversity than the Newham trend <sup>13</sup>.

### Gay, Lesbian, Bisexual and Transgendered Residents

- 3.14 There are no clear figures indicating the number or distribution of gay, lesbian, bisexual and transgendered residents within Newham. National estimates indicate that between 5 to 7% of the population is gay, lesbian bisexual or transgender and that the proportion may be higher in London than elsewhere in the UK. If applied to the Newham population, this would suggest at least between 15,400 and 21,560 people identifying themselves as gay, lesbian, bisexual or transgender in the borough <sup>9</sup>.
- 3.15 In regards to the construction and operation of the proposed CADP, the potential health pathways under investigation do not present a disproportionate impact or risk to this community group.

### Education

- 3.16 Table 3.4 presents [the most up to date](#) qualification attainment data <sup>14</sup> providing an overview of the highest level of qualifications held within the London Borough of Newham, London and England and Wales.

**Table 3.4 Qualifications in Percentage (Jan 2014-Dec 2014) of Resident Population Aged 16-64.**

Highest Level of Qualification	Newham	London	Great Britain
NVQ4 and above	36.8	49.1	36.0
NVQ3 and above	53.1	64.7	56.7
NVQ2 and above	65.3	76.4	73.3
NVQ1 and above	71.4	84.2	85.0
Other qualifications	17.7	8.0	6.2
No qualifications	10.9	7.8	8.8

**No qualifications:** No formal qualifications  
**NVQ 1 equivalent:** fewer than 5 GCSEs at grades A-C, foundation GNVQ, NVQ 1, intermediate 1 national qualification (Scotland) or equivalent.  
**NVQ 2 equivalent:** 5 or more GCSEs at grades A-C, intermediate GNVQ, NVQ 2, intermediate 2 national qualification (Scotland) or equivalent.  
**NVQ 3 equivalent:** 2 or more A levels, advanced GNVQ, NVQ 3, 2 or more higher or advanced higher national qualifications (Scotland) or equivalent.  
**NVQ 4 equivalent and above:** HND, Degree and Higher Degree level qualifications or equivalent.  
**Other qualifications:** foreign qualifications and some professional qualifications.

Source: ONS annual population survey.  
 % is a proportion of resident population of area aged 16-64.

- 3.17 As shown in Table 3.4, compared with the [national and London trend](#), the population of Newham has fewer qualifications across all bands and a higher percentage of people with no qualifications.

12 NHS North East London and the City. (2012). Newham Joint Strategic Needs Assessment 2011/12: September 2012 Update. Available at <http://www.newham.gov.uk/Documents/Council%20and%20Democracy/JSNASept2012Update.pdf> last accessed 25/08/15.

13 Office for National Statistics. (2011). 2011 Census: Ethnic Group 2011 (QS201EW). Available at [www.neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=7&b=6505416&c=Royal+Docks&d=14&e=13&g=6335034&i=1001x1003x1004&o=362&m=0&r=1&s=1372781971607&enc=1&dsFamilyId=2575](http://www.neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=7&b=6505416&c=Royal+Docks&d=14&e=13&g=6335034&i=1001x1003x1004&o=362&m=0&r=1&s=1372781971607&enc=1&dsFamilyId=2575) last accessed 25/08/15.

14 Nomis (2015) Labour Market Profile. Available at <https://www.nomisweb.co.uk/reports/lmp/la/1946157255/report.aspx?town=newham#tabquals> last accessed 25/08/15.

This trend is consistent with the 2012 JSNA<sup>12</sup>, and further reinforced through the Public Health England (PHE) 2015 health profiles<sup>15</sup>.

- 3.18 Such a profile indicates a potential barrier to employment and income uptake, and a factor influencing relative deprivation and associated burdens of poor health<sup>16</sup>.

## Employment

- 3.19 The Borough of Newham has a high level of unemployment (12.9%, the highest in London) compared against the average for both London (8.9 %) and England (7.8%). This is coupled with a high level of economic inactivity and a higher percentage of job seeker allowance claimants (6% in Newham compared with 4% in London and 4% in Great Britain)<sup>17</sup>. This remains more pronounced among the 18 - 24 year age group<sup>18</sup>. Education and employment have been identified through the 2012 Newham JSNA as a key priority in the development of local health plans<sup>9</sup> and in tackling factors that have a strong contributing influence defining the burden of poor health in Newham<sup>16</sup>.
- 3.20 As shown in Table 3.5, compared with London fewer people in Newham are employed in senior and professional occupations but many more work in low skilled elementary jobs, this data tallies with the level of qualifications held in the area as shown in Table 3.5<sup>19</sup>.

**Table 3.5 Occupation Expressed as a Percentage**

Occupation	Newham	London	England
Managers, Directors and Senior Officials	7.2	11.6	10.9
Professional Occupations	14.8	22.5	17.5
Associate Professional and Technical Occupations	9.9	16.3	12.8
Administrative and Secretarial Occupations	10.2	11.7	11.5
Skilled Trades Occupations	10.4	8.3	11.4
Caring, Leisure and Other Service Occupations	9.2	7.9	9.3
Sales and Customer Service Occupations	12.8	7.5	8.4
Process, Plant and Machine Operatives	6.8	4.7	7.2
Elementary Occupations	18.6	9.6	11.1

- 3.21 Newham residents are therefore considered sensitive to socio-economic health pathways in terms of potential impacts but also opportunities.

15 Public Health England (2015). Newham Public Health Profile 2015. Available at [http://www.apho.org.uk/default.aspx?QN=P\\_HEALTH\\_PROFILES](http://www.apho.org.uk/default.aspx?QN=P_HEALTH_PROFILES) last accessed 25/08/15.

16 Improving the health of people in Newham: Newham's Health & Wellbeing Strategy (2014). Available at <http://www.newham.gov.uk/Documents/Council%20and%20Democracy/Health%20and%20Wellbeing%20Strategy.pdf> last accessed 25/08/2015.

17 Office for National Statistics. (2011). 2011 Census: Economic Deprivation. Available at <http://www.neighbourhood.statistics.gov.uk/dissemination/LeadKeyFigures.do?a=7&b=6275177&c=newham&d=13&e=4&q=6334753&i=1001x1003x1004&m=0&r=1&s=1372760409018&enc=1> last accessed 25/08/15.

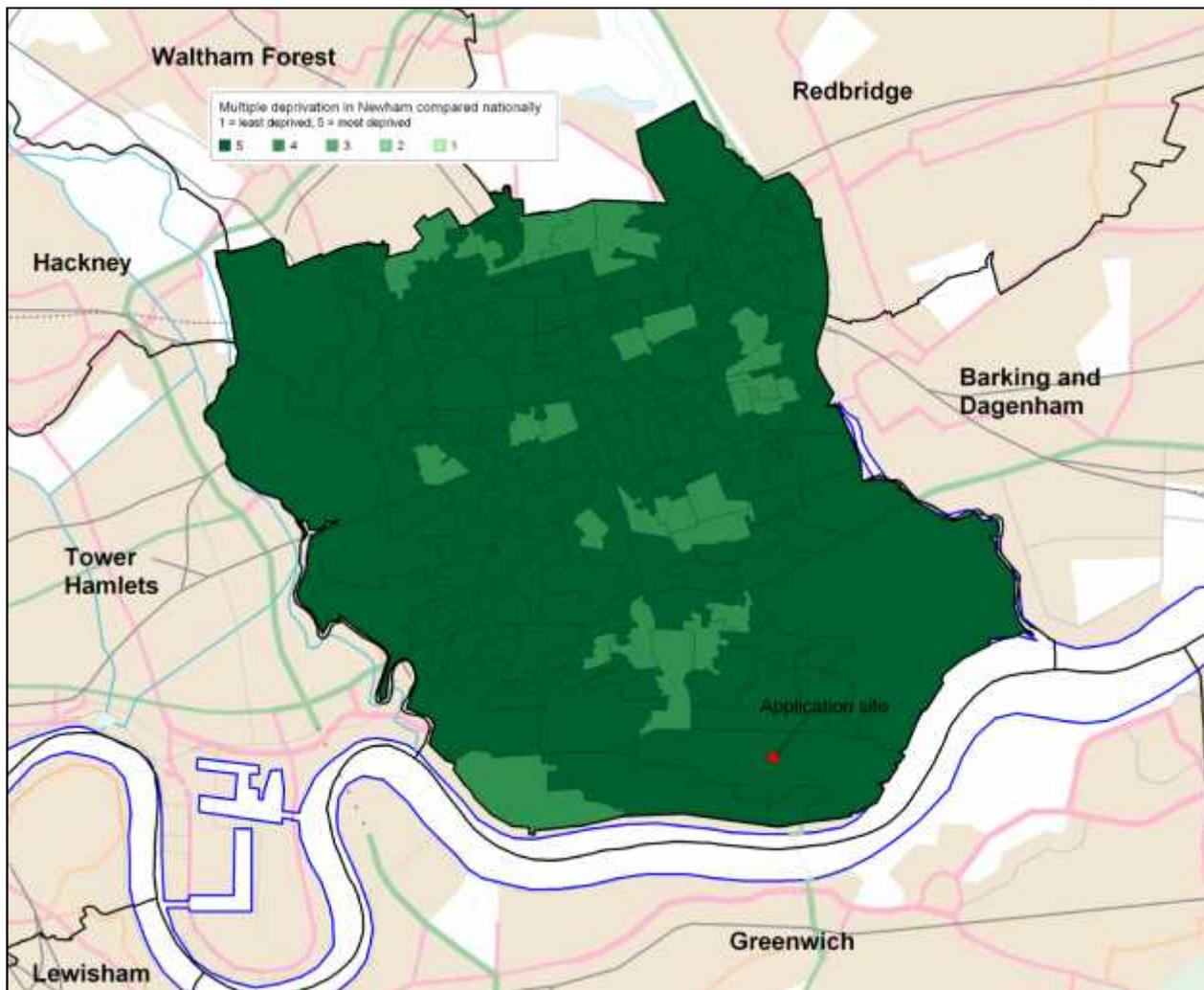
18 Office for National Statistics. (2014). Newham Local Labour Profile. Available at <http://www.nomisweb.co.uk/reports/lmp/la/1946157255/report.aspx#tabempunemp> last accessed 25/08/15.

19 Office for National Statistics. (2011). 2011 Census: Occupation (KS608EW). Available at <http://www.neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=7&b=6275177&c=newham&d=13&e=9&q=6334753&i=1001x1003x1004&m=0&r=1&s=1372762821912&enc=1&dsFamilyId=2541> last assessed 25/08/15.

## Deprivation

- 3.22 The Index of Multiple Deprivation (IMD) measures relative levels of deprivation in small areas of England against seven weighted domains. The domains and associated weightings include income (22.5%), employment (22.5%), health (13.5%), education (13.5%), barriers to housing (9.3%), crime (9.3%) and living environment (9.3%).
- 3.23 As indicated in the 2012 JSNA 9 and [Newham's Health & Wellbeing Strategy](#) <sup>16</sup>, socioeconomic deprivation is one of the most important factors accounting for poorer health outcomes in Newham. Based on the IMD, Newham is the 3<sup>rd</sup> most deprived local authority area in the country 9. Figure 3.4 shows IMD scores within Newham compared to the rest of England, split equally into five ranks (quintiles) where 1 = least deprived and 5 = most deprived. As is clear from the figure, all of Newham falls into the two most-deprived quintiles, and the great majority is among the most-deprived 20% of LSOAs in England.

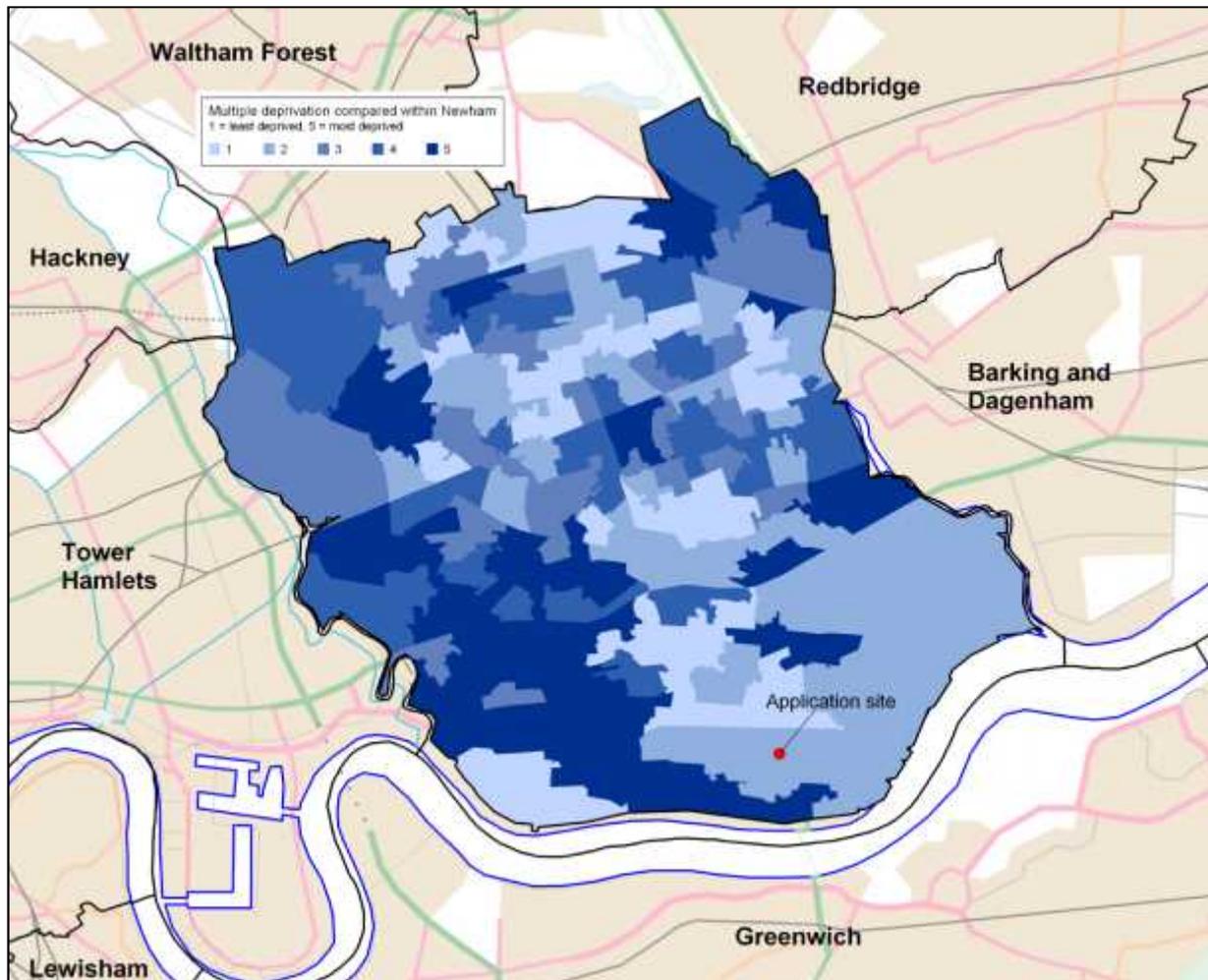
**Figure 3.4 Index of Multiple Deprivation Compared Nationally**



- 3.24 Figure 3.5 shows IMD scores compared within Newham itself, with scores shown by quintiles where 1 = least deprived and 5 = most deprived. Within Newham, relative levels of deprivation do not have a clear spatial trend, although notably a number of the most-deprived areas lie immediately to the south and west of the application site.

3.25 Communities in proximity to the Airport therefore demonstrate a high level of relative deprivation, and are considered sensitive to socio-economic health pathways (i.e. activities with the potential to influence, education, income and employment).

**Figure 3.5 Index of Multiple Deprivation Compared Within Newham**



## Health

3.26 The 2015 Newham Public Health Profile indicates that the health of people in Newham is mixed compared with the England average, and significant associations between areas of socio-economic deprivation and burdens of poor health higher than the national trend<sup>20</sup>.

## Life Expectancy

3.27 The average life expectancy in Newham is 78.5 years for males and 82.6 years for females compared with the average for England of 79.4 years for males and 83.1 years for females<sup>20</sup>.

3.28 There is also significant variation within Newham where the gap in life expectancy strongly correlates with socio-economic deprivation, where the difference between the most and least deprived is 6.9 years for men and 6.7 years for women in<sup>20</sup>.

<sup>20</sup> Public Health England (2015). Newham Public Health Profile 2015. Available at <http://www.apho.org.uk/resource/view.aspx?RID=50215&SEARCH=N> last accessed 25/08/15.

- 3.29 The number of early deaths due to heart disease and stroke is significantly higher in Newham compared with the average for England (105.3 compared with 78.2 per 100,000 people aged less than 75 years)<sup>20</sup>.
- 3.30 In keeping with the national trend there has been a steady decrease in all age all-cause mortality, early death rates from heart disease and stroke and early deaths rates from cancer during 2000 – 2015. However, such rates remain consistently higher in Newham compared with England<sup>15</sup>.

## Lifestyle

### Alcohol

- 3.31 The Newham Alcohol Harm and Disorder Reduction Plan 2010-2013 identifies alcohol misuse as a significant problem for Newham, and as a cause of serious violent crime and anti-social behaviour. During 2009 – 2010 there were a total of 1,911 alcohol related crimes of which 49% were categorised as violence against the person or sexual offences. Such crimes are distributed across the borough with hotspot areas focused around town centres<sup>21</sup>.

### Smoking

- 3.32 Smoking is the largest cause of preventable death, accounting for more than 81,400 premature deaths in England in 2009<sup>22</sup>. In Newham the number of adults who smoke remains comparable with the England average, reducing from at 20.9% and 20.7% respectively in 2013 to 18.8% and 18.4% in 2015. The rate of smoking related deaths is equally in keeping with the national trend (at 288.4 and 288.7 per 100,000 respectively)<sup>23</sup>. As recommended in the JSNA continued investment in the Newham Stop Smoking service is required alongside work that is targeted toward priority groups<sup>24</sup>.

### Exercise and Obesity

- 3.33 Obesity is a preventable cause of morbidity and early mortality. Levels of obesity within Newham have improved since 2013, and are now lower than the national average at 20% and 23% respectively. While the percentage of physically active adults in Newham has improved since 2013, it remains lower than the national average at 43% in Newham compared with 56% across England<sup>25</sup>.
- 3.34 The National Child Measurement Programme has indicated that in Newham 12.9% of reception class pupils are obese against 11.0% across London<sup>26</sup> and 9.5% across England. For the Year 6

21 Newham London. (2010). Newham Alcohol Harm and Disorder Reduction Plan 2010-2013. Available at <http://mgov.newham.gov.uk/documents/s35160/Newham%20Alcohol%20Harm%20and%20Disorder%20Reduction%20Plan.pdf> last accessed 25/08/15

22 Department of Health. (2011). Healthy Lives, Healthy People: A Tobacco Control Plan for England. Available at [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/135349/dh\\_124960.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/135349/dh_124960.pdf) last accessed 25/08/15.

23 Public Health England (2015). Newham Public Health Profile 2015. Available at [www.apho.org.uk/resource/view.aspx?RID=50215&SEARCH=N\\*](http://www.apho.org.uk/resource/view.aspx?RID=50215&SEARCH=N*) last accessed 14/08/15.

24 NHS North East London and the City. (2012). Newham Joint Strategic Needs Assessment 2011/12: September 2012 Update. Available at [www.newhamccg.nhs.uk/Docs/2%204%20JSNA%20Sept%2012%20Update.pdf](http://www.newhamccg.nhs.uk/Docs/2%204%20JSNA%20Sept%2012%20Update.pdf) last accessed 01/07/13.

25 Public Health England (2015). Newham Public Health Profile 2015. Available at [www.apho.org.uk/resource/view.aspx?RID=50215&SEARCH=N\\*](http://www.apho.org.uk/resource/view.aspx?RID=50215&SEARCH=N*) last accessed 14/08/15.

26 The Health and Social Care Information Centre (2012). National Child Measurement Programme: England, 2011/12 School Year. Available at <https://catalogue.ic.nhs.uk/publications/public-health/obesity/nati-chil-meas-prog-eng-2011-2012/nati-chil-meas-prog-eng-2011-2012-rep.pdf> last accessed 02/07/13.

children, the gap between the geographic areas remains similar but overall levels of obesity have nearly doubled to 25% in Newham, 22.5% in London and 19.2% in England<sup>23, 24, 26</sup>.

## Crime

- 3.35 As reported through the JSNA, violent crime impacts on health both directly and through its impact on the wider community in terms of perceived risk, and changes in behaviour and social/recreational activities and networks (particularly within the elderly community).
- 3.36 Rates of violent crime are high in Newham compared to the London average<sup>23</sup>, and 48% of residents in the borough perceive anti-social behaviour to be a problem (the highest of all London boroughs)<sup>27</sup>.

## Community Health Profile Conclusion

- 3.37 Newham exhibits a densely populated and highly diverse community (in terms of ethnicity and religion) and a younger demographic than national and regional averages.
- 3.38 Key challenges for the borough include a relatively low education attainment and skills base, high levels of socio-economic deprivation and pockets of deprivation amongst the highest in England. Unemployment is a key priority for the borough as set out through the JSNA; unemployment remains above the national average with a subsequent higher number of JSA claimants.
- 3.39 Although improving, health within the borough remains below the national trend and burdens of poor health are closely associated with pockets of socio-economic deprivation. Lifestyle choices including smoking and healthy eating are comparable with the national average. However, Newham has a higher number smoking related mortality obesity (particularly in children) and incidents of violent crime<sup>23</sup>.
- 3.40 In contrast, the Royal Docks (where the Airport is located), exhibits a significantly lower population density and ethnic diversity, yet exhibits high levels of socio-economic deprivation.
- 3.41 Although socio-economic circumstance and health is generally improving in Newham, there remain pockets of socio-economic deprivation and burdens of poor health that make specific communities sensitive to changes in environmental and socio-economic conditions. Areas exhibiting high burdens of poor health are more at risk from factors that may exacerbate existing conditions. As such, the assessment section of this UHIA considers the highest burdens of poor health to ensure a conservative approach.
- 3.42 Local communities remain equally sensitive to improvements in socio-economic status (through increased education, employment, and income) and lifestyle activities (such as improved social networks, social capital, improved diet and physical activity), which will aid in addressing an underlying factor for patterns of existing poor health. The assessment section and subsequent HAP investigates potential health benefits and necessary initiatives to improve the uptake of such benefit locally, associated with the proposed CADP.

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27 NHS North East London and the City. (2012). Newham Joint Strategic Needs Assessment 2011/12: September 2012 Update. Available at [www.newhamccg.nhs.uk/Docs/2%204%20JSNA%20Sept%2012%20Update.pdf](http://www.newhamccg.nhs.uk/Docs/2%204%20JSNA%20Sept%2012%20Update.pdf) last accessed 25/08/15.

- 3.43 In terms of equality and sensitive community groups, the potential health pathways associated with the construction and operation of the proposed CADP will not have a disproportionate impact upon any single community group (ethnicity, religion, sexual orientation etc), although sensitive receptors are considered to include individuals exhibiting high levels of socio-economic deprivation, existing burdens of poor health and certain age groups (sensitive to transport impacts and changes in noise and air quality). The assessment section and subsequent HAP consider such sensitivity, [whilst the separate Updated EqlA \(Quod, September 2015\) is presented at Appendix B.](#)
- 3.44 [The data utilised within the community health profile remains appropriate, drawing from the most recent National Census information and most recent Joint strategic Health Needs Assessment. A review of the Public Health England 2015 Community Health Profile <sup>28</sup> or Newham's Health & Wellbeing Strategy <sup>16</sup>, do not alter the conclusions of the original community profile, or influence the selection of assessment protocols and underlying evidence to be applied in the UHIA.](#)

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28 [Public Health England \(2015\). Newham Public Health Profile 2015. Available at \[www.apho.org.uk/resource/view.aspx?RID=50215&SEARCH=N\]\(http://www.apho.org.uk/resource/view.aspx?RID=50215&SEARCH=N\)](#) last accessed 14/08/15.

## 4 Stakeholder Engagement

### Overview

- 4.1 An important component of gathering an appropriate evidence base and tailoring the [UHIA](#) to local circumstance is seeking the views of stakeholders and representatives of communities likely to be affected by the proposed CADP. This section provides an overview of the stakeholder engagement strategy and summarises the key outputs gained to further refine the focus of the [UHIA](#) and the recommendations within the HAP, [including the health response to LBN's Regulation 22 request of 23<sup>rd</sup> May 2014](#).
- 4.2 For a full account of the integrated engagement strategy and its outputs, please refer to the Statement of Community Involvement accompanying the CADP planning submission.

### Scoping

- 4.3 The HIA scoping document, [presented at Appendix A of this UHIA](#), was issued to the Directors of Public Health for the London Boroughs of Newham, Tower Hamlets and Greenwich via email on the 23<sup>rd</sup> November 2012. Key comments and suggestions received are summarised in Table 4.1.

**Table 4.1 Scoping Responses**

Topic	Summary of Stakeholder Comments
Policy	This is also in line with policy SP2 – Healthy Neighbourhoods within the adopted Core Strategy, which requires a HIA to be submitted with all major planning applications.
Integration with the EIA	Further information in terms of how the proposed HIA will interact with the overall EIA and how health issues will be weighted and assessed within the overall EIA matrix
Health Benefits	Demonstrate how health will be protected and how development has, in addition to any proposed mitigation measures, avoided and reduced any impacts on the health of the local population.
Project Profile	Try to actively look at the CADP and how it can minimise its impacts on health, but also how it can proactively promote healthier lifestyles within the local community. As part of the HIA it would also be beneficial to see how the health of passengers has been considered as part of the CADP, particularly considering the construction of a new extended Terminal and reconfiguration of the Forecourt.
Community Profile	Fully support the creation of a Community Profile and this should be made an integral part of the HIA's development process.
Engagement	Engagement will need to be continuous throughout all stages of the CADP, from planning to completion and after completion, and in such a frequency that really addresses the concerns of the local population. Propose that consideration is given to the creation of a healthy local community group that is be able to give feedback on any impacts which might only develop and be noticed after the completion of the CADP.
Access	Disruption to transport may impact differentially and to what extent has improved access including for disabled people been factored into the CADP.
Assessment	<ul style="list-style-type: none"> <li>▪ Resource minimisation – e.g. sustainable use of water resources, use of renewable energy, reduction of energy demand by design (both during construction and operation phases)</li> <li>▪ Promoting independence – wheelchair access etc., (presumably this is compulsory in a development of this kind)</li> <li>▪ Use of building materials – use of non-toxic building materials, use of renewably sourced building materials</li> </ul>

Topic	Summary of Stakeholder Comments
	<ul style="list-style-type: none"> <li data-bbox="560 215 1439 297">▪ Promotion of active travel – does the CADP support sustainable forms of transport (cycle storage, pedestrian safety, connectivity with other infrastructure)</li> <li data-bbox="560 297 1439 358">▪ Crime reduction/safety – what measures are taken to increase safety (secure by design) both within the CADP and in vicinity</li> <li data-bbox="560 358 1439 389">▪ How will health impacts be monitored post-development?</li> </ul>

4.4 The HIA Scoping exercise with key health stakeholders confirmed that the scope and focus of the HIA was appropriate, that the health pathways to be investigated were correct, and suggested additional aspects and community support initiatives that the Airport could consider through the refinement of the proposed CADP and within the HAP to support wider health improvement programmes within Newham.

## Regulation 22 Request and HIA Addendum

4.5 Following consultation on the first [Environmental Statement Addendum \(ESA, March 2014\)](#) and related submissions, LBN issued a further Regulation 22 letter dated 23rd May 2014 Part 2 (“Non Regulation 22 Additional Information / Clarifications”). Items 1-5 of LBN’s letter requested supplemental information in relation to the HIA and corresponding technical chapters of the ES.

4.6 A stand-alone HIA Addendum (RPS, May 2014) was therefore prepared in order to respond to this request, [and this supplemental information is reproduced below with necessary updates](#).

### **Part 2 of LBN’s Letter, Item 1**

*LBN Letter, Part 2:1) ‘In LCA’s response to the first Regulation 22 request (received on the 10th March 2014), further information was provided in relation to noise and its potential impact on schools and hospitals. Likewise, further information has been provided in relation to night time construction noise and possible sleep disturbance. This Regulation 22 also requests for further information to be provided in relation to noise, as detailed in Part 1 above. All new information that is provided in the ES and subsequent addendums is to be considered in the HIA’.*

### **Response in relation to noise and potential impacts on schools and hospitals**

4.7 As detailed in Chapter 8 of the [UES](#) and Section 5 of the [UHIA](#), noise exposure levels resulting from [the increase in aircraft movements between the With and Without CADP scenarios](#) will be minor.

4.8 The RANCH study <sup>29</sup>, researched the effects of road traffic and aircraft noise on the cognitive performance and health of children. In this study, a linear exposure-response association was found between aircraft noise exposure and adverse effects on reading comprehension, episodic memory and working memory. It was estimated that a 5 dB (A) increase in noise exposure at schools was associated with a two-month impairment in reading age of UK children aged 9-10.

4.9 In the case of the proposed CADP, the greatest potential change in noise exposure at all of the modelled schools is 2 dB (A), below what is generally considered perceptible, and substantially less than the RANCH study noise change increment associated with adverse impacts. Therefore, the predicted increases in noise are not of a level to quantify any impact on academic performance using the current evidence base.

4.10 For those schools and colleges experiencing relatively high levels of noise at present, such as Drew Primary School and the University of East London, these have already been built or insulated to mitigate higher noise levels from the Airport.

4.11 Whilst Chapter 8 of the UES provides greater resolution to the potential changes in noise at schools, the predicted increases continue to be below a level to quantify any measurable effect on cognitive performance, and the Airport continues to engage and support local academic institutes in order to address issues and maximise opportunities.

4.12 In relation to hospitals and hospices, Table 8.35 of the UES includes all relevant receptors including Richard House Hospice and paragraph 8.275 specifically refers to this, stating:

*Richard House hospice currently lies just within the boundary of the existing Sound Insulation Scheme and is predicted to experience a 1 dB increase in noise by 2025. This is a new building however and should be well insulated against external noise.*

4.13 This change is therefore below what is generally considered perceptible, and no further assessment was required.

***Response in relation to night time construction noise and possible sleep disturbance***

4.14 As detailed in UES Chapter 8, a detailed noise assessment has been undertaken, taking into account the Updated Construction Programme. This assessment also considers the appropriate night time noise thresholds for sleep disturbance (see paragraphs 8.146 to 8.150).

4.15 As stated in Section 5 of the original HIA, prior to mitigation, potential health impacts from construction noise would be limited to annoyance and potential intermittent sleep disturbance from landside construction activities in proximity to communities. The updated information presented in the UES and subsequent responses does not change this conclusion.

4.16 However, when taking into account the following points and mitigation measures, residual health impacts are not considered significant.

- The CADP will build upon the success of the construction of the Eastern Apron (Operational Improvement Programme, OIP), which managed environmental and noise impacts (including night time periods) effectively, with minimal community complaints;
- The intermittent nature and planned programme of noise-generating construction work, which will be further managed by the Construction Noise and Vibration Management and Mitigation Strategy (CNVMMS, as presented in 8.23 of the UES);
- Other mitigation measures detailed in Chapter 6 and 8 of the UES; and
- Committed on-going engagement with local communities to manage any residual impacts, and enable local residents to address temporary and intermittent disruption.

4.17 On the above basis, no further health assessment was required, the conclusions of the HIA remained justified, and the recommendations detailed in the HAP did not require amendment.

### **Part 2 of LBN's Letter, Item 2**

*LBN Letter, Part 2:2) 'It is considered that the annoyance is under-estimated in the HIA as the latest dose response relationships have not been considered. This is to be considered'.*

#### **Response:**

- 4.18 The evidence base captured in the 2010 EEA Good Practice Guide <sup>30</sup> provides a useful, concise summary of the general noise health evidence base as of 2010 setting out recent dose response noise annoyance data. However, the exposure response parameters for annoyance provided within the guide are not definitive, and do not form the sector-approved assessment protocol for airport projects in the UK.
- 4.19 As detailed in Appendix B of the [original](#) HIA, while there is some evidence to suggest that attitudes to noise have changed, there remains considerable debate in this area, and in regard to assessing annoyance from aviation noise, the approach outlined in the Civil Aviation Authority (CAA) Guidance <sup>31</sup> remains prominent in evidence-based assessments for planning purposes.
- 4.20 It is important to note that using an alternative set of exposure response parameters will not alter the noise contours modelled, the population exposure within each noise contour, or the mitigation recommended. It will not replace the assessment or conclusions within [this UHIA](#). It will solely recognise that attitudes towards noise may be changing, and reinforces the need to manage noise effectively.
- 4.21 On this basis, while an alternative assessment of the same noise exposure scenarios may provide additional commentary as to how attitudes towards noise (and towards aviation noise in particular) have changed, this would not fundamentally change the conclusions of the HIA or the recommendations in the HAP concerning the importance of noise management and the appropriate mitigation measures proposed. It is also stated in the 2010 EEA Good Practice Guide that using the exposure response parameters adopted in this [UHIA](#) is formally valid in the context of the Environmental Noise Directive while recognising that it leads to a conservative approach.

### **Part 2 of LBN's Letter, Item 3**

*LBN Letter, Part 2:3) 'Cardio-vascular effects were not quantified and also require consideration'.*

#### **Response:**

- 4.22 In relation to cardiovascular health, the current scientific evidence base demonstrates that there are varying associations between changes in both aircraft and road noise exposure, and hypertension (high blood pressure). There is an associated risk of myocardial infarction (MI, heart attack) observed from exposure to road noise, but less robust evidence from aircraft noise <sup>32, 33</sup>.

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30 EEA Good practice guide on noise exposure and potential health effects (Technical report No 11/2010) published by EEA (European Environment Agency), 10 November 2010

31 Civil Aviation Authority. (2007). CAP 725 CAA Guidance on the Application of the Airspace Change Process. Available at <http://www.caa.co.uk/docs/33/CAP725.PDF> last accessed 25/08/15.

32 World Health Organisation (2011) Burden of disease from environmental noise: Quantification of healthy life years lost in Europe

33 World Health Organisation (2012) Methodological guidance for estimating the burden of disease from environmental noise.ver-2.

- 4.23 The recent CAA report on aircraft noise<sup>34</sup> best encapsulates the current scientific evidence base on the cardiovascular health from aviation noise in their 2013 review:

*“In terms of cardiovascular impact there are mixed conclusions from the various reviews and papers on the evidence for effects. Some reviewers consider that there is sufficient evidence, others that the evidence does not convincingly demonstrate an association. Based on existing evidence, it is possible that exposure to aircraft noise may be a risk factor for cardiovascular disease and all would agree that further research is needed to examine the impact of noise on cardiovascular health.”*

- 4.24 The potential for a causal mechanism between aircraft noise and MI is not well understood, but biologically plausible autonomic and endocrine pathways are a possible basis for a potential link between cardiovascular disease with particular reference to chronic exposure to night-time noise<sup>32, 33</sup>. This potential health pathway is not applicable in the case of the proposed CADP development, as the Airport does not seek to alter the current operational flying hours, and hence will not increase night-time aircraft noise.
- 4.25 Given the changes in daytime and overall noise exposure predicted, the fact that there will be no change in night time operations, and the limitations of the scientific evidence base, an attempt to quantify potential cardiovascular risk is not appropriate in this instance. Instead, the individual noise health pathways, where sufficient evidence exists for an exposure response pertinent to the project, have been assessed within [this UHIA](#).
- 4.26 On the above basis, [Section 5 of this UHIA](#) has further considered the wider health evidence base and alternative assessment protocols. The more detailed information provides greater temporal and spatial resolution, but does not influence the conclusion and recommendations of the [original HIA](#) and Health Action Plan (HAP, included within the HIA). The alternative assessment protocols suggested, while providing additional commentary, again do not influence the findings of the [original HIA](#), its conclusions or the recommendations of the HAP.

***Part 2 of LBN's Letter, Item 4***

*LBN Letter, Part 2:3) ‘Similar to 5, Part 1 above, the health impacts of the proposals upon the Royals Business Park should be considered. Specifically in relation to planning application reference number 14/00618/OUT as mentioned above’.*

***Response***

- 4.27 An update to the Cumulative Effects Assessment has been provided within Chapter 18 [and Appendix 18.1](#) of the [UES](#) which includes the Royals Business Park (ABP Scheme) (Ref: 14/00618/OUT).
- 4.28 The findings of the ES that supported the Royals Business Park (ABP Scheme) have been considered in terms of potential cumulative impacts when considered with the CADP applications. Other [cumulative](#) schemes that have subsequently emerged have also been considered [within UES Chapter 18, as listed in Table 18.2 of that chapter](#).

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34 Civil Aviation Authority (2013). ERCD Report 1208: Aircraft Noise, Sleep Disturbance and Health Effects: A Review. <http://www.caa.co.uk/application.aspx?catid=33&pagetype=65&appid=11&mode=detail&id=5360>

- 4.29 It is acknowledged that the construction works have the greatest potential to result in cumulative effect interactions (e.g. noise, dust), particularly in view of the relative proximity of the CADP and Royals Business Park (ABP Scheme) sites and the extended duration of both construction programmes. However, for the reasons set out in the UES, such effects are likely to be no worse than 'negligible' to minor adverse'. The ABP scheme has been designed in full knowledge of the CADP proposals and appropriate design and other mitigation measures have been put forward to ensure that acceptable environmental conditions are achieved and maintained throughout the construction works and subsequent occupation and operation of the development,
- 4.30 Each of the [remaining cumulative](#) developments identified in [Table 18.2](#) of the UES have or will be sufficiently conditioned to mitigate any adverse effects from their construction and operation activities as part of the relevant planning permission, for example, by the implementation of a Construction Logistics Plan (CLP) and Construction Environmental Management Plan (CEMP) to control emissions or other pollution during this phase.
- 4.31 In conclusion, there would be no significant adverse cumulative impacts as a result of the proposed CADP in combination with the developments considered in [Chapter 18 of the UES](#).
- 4.32 These conclusions have been considered in terms of health impacts. As there are no [significant](#) environmental impacts in relation to the cumulative developments (including noise) it is considered that there will be [no corresponding](#) health impacts. [As such](#), the proposed Royals Business Park (ABP Scheme) and other schemes discussed within the UES do not influence the conclusion and recommendations of [this UHIA](#).

***Part 2 of LBN's Letter, Item 5***

*LBN Letter, Part 2:5) 'For clarification, though the submitted Health Impact Assessment is a separate document, reference to it is included within Chapter 7 (Socio-Economics, Community and Recreation) of the ES. However, as a separate document it is considered that the additional information requested above, does not form part of a formal Regulation 22(1) request'.*

***Response:***

- 4.33 This [was](#) noted.

**HIA Addendum - Summary of Conclusions**

- 4.34 The purpose of the HIA Addendum [was](#) to respond to Part 2, Items 1-5 of LBN's letter dated 23rd May 2014.
- 4.35 The information provided within the HIA Addendum [did](#) not give rise to any likely significant health effects that [were](#) new or materially different than those set out in the original HIA.

## 5 Assessment

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### Introduction

- 5.1 The following assessment section investigates each of the health pathways previously identified and verified through scoping with key health stakeholders.
- 5.2 The UHIA does not seek to repeat the detailed methodology, baseline monitoring studies, modelling or the full impact assessment outputs of the various technical assessments within the UES. Instead, it takes the UES outputs and applies these to assess the potential outcome on health.

### Emissions to Air

- 5.3 A health pathway associated with the construction and operation of the proposed CADP is the generation of emissions to air and consequent community exposure.
- 5.4 Research into the potential health effects of air pollutants is extensive and provides statistically significant associations between many classical air pollutants and effects on a wide range of cardiovascular and respiratory health outcomes.
- 5.5 The following assessment concentrates on potential risk from changes in exposure to particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) and nitrogen dioxide (NO<sub>2</sub>) during the construction and operational phases of the proposed CADP, being primary pollutants and the primary focus for research by the Committee on the Medical Effects of Air Pollutants (COMEAP)<sup>35, 36, 37</sup>. During the development of the original HIA, the health evidence base for NO<sub>2</sub> was still unclear, which led to the application of the COMEAP NO<sub>2</sub> exposure response assessment as sensitivity analysis. Since 2013, the health evidence base for NO<sub>2</sub> has developed, and while there is still some uncertainty on the specific causal mechanisms (where NO<sub>2</sub> may be a marker for pollutants in general), new exposure response metrics are now available.

### Construction

- 5.6 As detailed in Chapter 9 of the UES (Air Quality), prior to mitigation there will be a high risk of dust deposition impacts during much of the construction works and a low risk of human health impacts related to PM<sub>10</sub> (rising to medium risk during the demolition activities). There are a number of receptors within 20m of the landside construction works, including properties that lie to the south of Newland Street and Brixham Street, and the community and educational facilities at the Storey Centre, Woodman Community Centre and Fight for Peace. Emissions associated with vehicular access during construction have been scoped out as insignificant, due to the relatively low number of movements on local roads (fewer than 25 HGV movements per day as an AADT).

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35 The Committee on the Medical Effects of Air Pollutants (2006). Cardiovascular Disease and Air Pollution. Department of Health. Available at [www.comeap.org.uk/images/stories/Documents/Reports/cvd%20report%202006.pdf](http://www.comeap.org.uk/images/stories/Documents/Reports/cvd%20report%202006.pdf) last accessed 15/07/13.

36 The Committee on the Medical Effects of Air Pollutants. (2007). Draft Long-Term Exposure to Air Pollution: Effect on Mortality. Available at [http://comeap.org.uk/images/stories/Documents/Reports/draft\\_mortality\\_report.pdf](http://comeap.org.uk/images/stories/Documents/Reports/draft_mortality_report.pdf) last accessed 15/07/13.

37 The Health Protection Agency for the Committee on the Medical Effects of Air Pollutants (2009). Long-Term Exposure to Air Pollution: Effect on Mortality. Available at <http://comeap.org.uk/images/stories/Documents/Reports/mortality%20report%202009.pdf> last accessed 15/07/13.

- 5.7 The air quality impacts associated with the *Accelerated Construction Programme* are considered in Appendix 6-6 of the ES. Whilst the overall construction period would be shortened under this scenario, there is no increased risk of dust impacts. Additionally, peak monthly construction traffic movements are predicted to be lower during the *Accelerated Construction Programme* due to the re-sequencing of activities.
- 5.8 As detailed in Chapter 9 of the UES, a comprehensive Dust Management Plan compliant with GLA Supplementary Planning Guidance<sup>38</sup> will be prepared in advance of the commencement of the CADP construction. With this mitigation in place, the impacts are considered to be insignificant and not of an order of magnitude to quantify any adverse health outcome to passengers, local communities or visitors.

## Operation

- 5.9 As detailed within Chapter 9 of the UES, dispersion modelling for PM<sub>10</sub>, PM<sub>2.5</sub> and NO<sub>2</sub> has been carried out for the Baseline Year (2014) and three future assessment years - 2020 (Transitional Year); 2023 (Design Year) and 2025 (Principal Assessment Year) for the Core With and Without CADP scenarios. Derivatives for these assessments include sensitivity tests comprising the '2023 With CADP Higher Passenger Case' and '2023 With CADP Faster Move to Jets Case'.
- 5.10 The following section draws from and builds upon such outputs to further explore and, where possible, quantify any potential risk to local community health applying the available health evidence base.

## Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>)

### PM<sub>10</sub>

- 5.11 As demonstrated in Chapter 9 of the UES, the Airport is not a significant source of PM<sub>10</sub> or PM<sub>2.5</sub> (particulate matter with a mean aerodynamic diameter of 10 and 2.5 microns or less). Modelled changes in annual mean concentrations at all receptors remain significantly within air quality standards set at concentrations below which effects are unlikely.
- 5.12 As shown in Table 5.1, the proposed CADP is not anticipated to significantly change local PM<sub>10</sub> concentration exposure at any of the receptors modelled. The most noteworthy change exhibited between the scenarios during any year is at R5; a residential receptor with a potential annual increase of 0.3 µg/m<sup>3</sup> in 2020, and 0.3 µg/m<sup>3</sup> in 2023 and 2025.
- 5.13 Minor reductions in annual mean PM<sub>10</sub> are also anticipated at R1 and R2 (Camel Road/Hartmann Road and Camel Road/Parker Street) of approximately -0.1 µg/m<sup>3</sup>.

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38 GLA (2014) The control of dust and emissions from construction and demolition. Supplementary Planning Guidance. Available at [https://www.london.gov.uk/sites/default/files/Dust%20and%20Emissions%20SPG%208%20July%202014\\_0.pdf](https://www.london.gov.uk/sites/default/files/Dust%20and%20Emissions%20SPG%208%20July%202014_0.pdf) last accessed 25/08/15

**Table 5.1: Difference in Annual Mean PM<sub>10</sub> between With and Without CADP Scenarios**

Receptor Number	Difference in PM <sub>10</sub> Annual Mean (µg/m <sup>3</sup> ) <sup>a</sup>				
	Difference between With and Without CADP 2020	Difference between With and Without CADP 2023		Difference between With and Without CADP 2025	
		Higher Passenger Case	Faster Move to jets Case	Higher Passenger Case	Faster Move to Jets Case
R1	-0.1	-0.1	-0.1	-0.1	-0.1
R2	-0.1	0.0	0.0	0.0	0.0
R3	0.0	0.0	0.1	0.1	0.1
R4	0.1	0.2	0.2	0.2	0.2
R5	0.2	0.3	0.3	0.3	0.3
R6	0.1	0.2	0.2	0.2	0.2
R7	0.1	0.1	0.1	0.1	0.1
R8	0.2	0.3	0.2	0.3	0.2
R9	0.2	0.2	0.2	0.2	0.2
R10	0.0	0.0	0.0	0.0	0.0
R11	0.0	0.0	0.0	0.0	0.0
R12	0.0	0.0	0.0	0.0	0.0
R13	0.0	0.1	0.0	0.1	0.0
R14	0.0	0.0	0.0	0.0	0.0
R15	0.0	0.0	0.0	0.0	0.0
R16	0.0	0.1	0.1	0.1	0.1
R17	0.1	0.1	0.1	0.1	0.1
R18	0.0	0.0	0.1	0.1	0.1
R18 (20m)	0.0	0.0	0.1	0.1	0.1
R19	0.0	0.0	0.0	0.0	0.0
R19 (20m)	0.0	0.0	0.0	0.0	0.0
R20	0.0	0.0	0.0	0.0	0.0
R20 (20m)	0.0	0.0	0.0	0.0	0.0
R21 (20m)	0.0	0.0	0.0	0.0	0.0
R22 (20m)	0.0	0.1	0.1	0.1	0.1
R22 (40m)	0.0	0.0	0.0	0.0	0.0
R23	0.1	0.1	0.1	0.1	0.1
R23 (20m)	0.0	0.0	0.0	0.0	0.0
R24	0.0	0.0	0.1	0.1	0.1
R24 (20m)	0.0	0.0	0.0	0.0	0.0
R25	0.0	0.1	0.1	0.1	0.1
R25 (10.5m)	0.0	0.1	0.1	0.1	0.1
R26	0.2	0.2	0.2	0.2	0.2
R26 (10.5m)	0.1	0.1	0.1	0.1	0.1
New Receptors					
R27	0.0	0.0	0.0	0.0	0.0
R27 (20m)	0.0	0.0	0.0	0.0	0.0
R28	0.0	0.0	0.0	0.0	0.0
R28 (20m)	0.0	0.0	0.0	0.0	0.0
R29	0.0	0.0	0.0	0.0	0.0
R29 (20m)	0.0	0.0	0.0	0.0	0.0

Receptor Number	Difference in PM <sub>10</sub> Annual Mean (µg/m <sup>3</sup> ) <sup>a</sup>				
	Difference between With and Without CADP 2020	Difference between With and Without CADP 2023		Difference between With and Without CADP 2025	
		Higher Passenger Case	Faster Move to jets Case	Higher Passenger Case	Faster Move to Jets Case
R30	0.0	0.0	0.0	0.0	0.0
R30 (20m)	0.0	0.0	0.0	0.0	0.0
R31	0.0	0.0	0.0	0.0	0.0
R31 (20m)	0.0	0.0	0.0	0.0	0.0
R32	0.0	0.0	0.0	0.0	0.0
R32 (20m)	0.0	0.0	0.0	0.0	0.0
R33	0.1	0.1	0.1	0.2	0.2
R33 (20m)	0.1	0.1	0.1	0.1	0.1
R34	0.0	0.0	0.0	0.0	0.0
R35	0.0	0.0	0.0	0.0	0.0
R35 (20m)	0.0	0.0	0.0	0.0	0.0
R36	0.0	0.1	0.0	0.1	0.0
R36 (20m)	0.0	0.0	0.0	0.0	0.0
R37	0.0	0.0	0.0	0.0	0.0
R38	0.0	0.0	0.0	0.0	0.0
R39	0.0	0.0	0.0	0.0	0.0
R39 (10.5m)	0.0	0.0	0.0	0.0	0.0
R40	-0.1	-0.1	-0.1	-0.1	-0.1
R40 (20m)	0.0	0.0	0.0	0.0	0.0
R41	0.0	0.0	0.0	0.0	0.0
R41 (13.5m)	0.0	0.0	0.0	0.0	0.0
For the complete Air Quality Dispersion model outputs, please refer to Chapter 9 of the UES					
<sup>a</sup> Values reported as 0.0 = changes in concentration between -0.05 and 0.05 µg/m <sup>3</sup> .					

- 5.14 The UK Department of Health's Committee on the Medical Effects of Air Pollutants establish that there is a 0.75% increased risk in the background rate of all-cause mortality per 10 µg.m<sup>3</sup> increase in PM<sub>10</sub><sup>39,40</sup>.
- 5.15 The maximum change in concentration and exposure of 0.3 µg.m<sup>3</sup> are orders of magnitude lower than is required to quantify any meaningful change in health outcome. [This conclusion is consistent with that of the original HIA and the Addendum to the HIA. More recently, the focus of the evidence base is on PM<sub>2.5</sub>, where a greater risk is apparent \(see below\).](#)
- 5.16 The COMEAP has also established that there is a 0.8% increased risk in respiratory and cardiovascular hospital admissions (Ischemic Heart Disease) per 10 µg.m<sup>3</sup> increase in PM<sub>10</sub><sup>41</sup>. The maximum annual-mean PM<sub>10</sub> increase of 0.3 µgm<sup>3</sup> and relative exposure is again orders of

39 The Committee on the Medical Effects of Air Pollutants. (2009). Long-Term Exposure to Air Pollution: Effect on Mortality. Available at

40 The Health Protection Agency for the Committee on the Medical Effects of Air Pollutants (2009). Long-Term Exposure to Air Pollution: Effect on Mortality.

41 The Committee on the Medical Effects of Air Pollutants (2006). Cardiovascular Disease and Air Pollution. Department of Health.

magnitude lower than is required to quantify any **significant health outcome** to local communities, passengers or visitors.

### PM<sub>2.5</sub>

- 5.17 Evidence suggests that increased exposure to PM<sub>2.5</sub> is potentially more hazardous to human health than larger particles<sup>42</sup>. However, as detailed in Chapter 9 of the UES, and summarised below, the Airport is not a significant source of PM<sub>2.5</sub>, and all modelled receptors will remain significantly below air quality standards **set at concentrations below which effects are unlikely**.
- 5.18 As shown in Table 5.2, the most significant change exhibited between the scenarios during any year is again at R5; (Newland Street/Kennard Street) with a potential annual **increase of 0.3 µg/m<sup>3</sup> in 2020, reducing to 0.2 µg/m<sup>3</sup> in 2023, then up to 0.3 µg/m<sup>3</sup> in 2025**.

**Table 5.2: Difference in Annual Mean PM<sub>2.5</sub> between With and Without Scheme Scenarios**

Receptor Number	Difference in PM <sub>2.5</sub> Annual Mean (µg/m <sup>3</sup> ) <sup>a</sup>				
	Difference between With and Without CADP 2020	Difference between With and Without CADP 2023		Difference between With and Without CADP 2025	
		Higher Passenger Case	Faster Move to jets Case	Higher Passenger Case	Faster Move to jets Case
R1	0.0	0.0	0.0	0.0	0.0
R2	0.0	0.0	0.0	0.0	0.0
R3	0.0	0.1	0.1	0.1	0.1
R4	0.1	0.2	0.2	0.2	0.2
R5	0.2	0.3	0.3	0.3	0.3
R6	0.1	0.1	0.1	0.1	0.1
R7	0.1	0.1	0.1	0.1	0.1
R8	0.1	0.1	0.1	0.2	0.1
R9	0.1	0.1	0.1	0.1	0.1
R10	0.0	0.0	0.0	0.0	0.0
R11	0.0	0.0	0.0	0.0	0.0
R12	0.0	0.0	0.0	0.0	0.0
R13	0.0	0.0	0.0	0.0	0.0
R14	0.0	0.0	0.1	0.1	0.1
R15	0.0	0.0	0.0	0.0	0.0
R16	0.0	0.1	0.1	0.1	0.1
R17	0.1	0.1	0.1	0.1	0.1
R18	0.0	0.0	0.1	0.1	0.1
R18 (20m)	0.0	0.0	0.1	0.0	0.1
R19	0.0	0.0	0.0	0.0	0.0
R19 (20m)	0.0	0.0	0.0	0.0	0.0
R20	0.0	0.0	0.0	0.0	0.0
R20 (20m)	0.0	0.0	0.0	0.0	0.0
R21 (20m)	0.0	0.0	0.0	0.0	0.0
R22 (20m)	0.0	0.1	0.1	0.1	0.1

Receptor Number	Difference in PM <sub>2.5</sub> Annual Mean (µg/m <sup>3</sup> ) <sup>a</sup>				
	Difference between With and Without CADP 2020	Difference between With and Without CADP 2023		Difference between With and Without CADP 2025	
		Higher Passenger Case	Faster Move to jets Case	Higher Passenger Case	Faster Move to jets Case
R22 (40m)	0.0	0.0	0.0	0.0	0.0
R23	0.0	0.1	0.1	0.1	0.1
R23 (20m)	0.0	0.0	0.0	0.0	0.0
R24	0.0	0.0	0.0	0.0	0.0
R24 (20m)	0.0	0.0	0.0	0.0	0.0
R25	0.0	0.1	0.1	0.1	0.1
R25 (10.5m)	0.0	0.1	0.1	0.1	0.1
R26	0.1	0.1	0.1	0.1	0.1
R26 (10.5m)	0.0	0.0	0.0	0.0	0.0
New Receptors					
R27	0.0	0.0	0.0	0.0	0.0
R27 (20m)	0.0	0.0	0.0	0.0	0.0
R28	0.0	0.0	0.0	0.0	0.0
R28 (20m)	0.0	0.0	0.0	0.0	0.0
R29	0.0	0.0	0.0	0.0	0.0
R29 (20m)	0.0	0.0	0.0	0.0	0.0
R30	0.0	0.0	0.0	0.0	0.0
R30 (20m)	0.0	0.0	0.0	0.0	0.0
R31	0.0	0.0	0.0	0.0	0.0
R31 (20m)	0.0	0.0	0.0	0.0	0.0
R32	0.0	0.0	0.0	0.0	0.0
R32 (20m)	0.0	0.0	0.0	0.0	0.0
R33	0.1	0.1	0.1	0.2	0.2
R33 (20m)	0.1	0.1	0.1	0.1	0.1
R34	0.0	0.0	0.0	0.0	0.0
R35	0.0	0.0	0.0	0.0	0.0
R35 (20m)	0.0	0.0	0.0	0.0	0.0
R36	0.0	0.0	0.0	0.0	0.0
R36 (20m)	0.0	0.0	0.0	0.0	0.0
R37	0.0	0.0	0.0	0.0	0.0
R38	0.0	0.0	0.0	0.0	0.0
R39	0.0	0.0	0.0	0.0	0.0
R39 (10.5m)	0.0	0.0	0.0	0.0	0.0
R40	0.0	0.0	0.0	0.0	0.0
R40 (20m)	0.0	0.0	0.0	0.0	0.0
R41	0.0	0.0	0.0	0.0	0.0
R41 (13.5m)	0.0	0.0	0.0	0.0	0.0
For the complete Air Quality Dispersion model outputs, please refer to Chapter 9 of the UES					
<sup>a</sup> Values reported as 0.0 = changes in concentration between -0.05 and 0.05 µg/m <sup>3</sup> .					

- 5.19 Similar to PM<sub>10</sub>, such changes in concentration exposure are negligible, and not of an order to quantify any significant change in local health outcome.
- 5.20 To clarify, exposure response coefficients published by the UK Department of Health's Committee on the Medical Effects of Air Pollutants <sup>43</sup>, [the WHO \(Health risks of air pollution in Europe: HRAPIE\)](#) <sup>44</sup> and a meta-analysis by Faustini can be applied to quantify the change in the background rate of all-cause mortality per 10 µg/m<sup>3</sup> increase in PM<sub>2.5</sub>
- 5.21 [Applying Office for National \(ONS\) Mortality Statistics \(Deaths Registered by Area of Usual Residence, 2013 Registrations\)](#), it is possible to derive the Newham mortality rate for those aged 30 and above, to establish a baseline mortality rate for use within the exposure response assessment.
- 5.22 [Applying the 30+ Newham baseline mortality rate of 1,238 per 100,000 and applying the central estimates for the COMEAP, WHO and Faustini exposure concentration-response functions \(CRF\) between 97,000-118,000 of typical London Borough of Newham residents would need to reside at receptor 5 in order for an effect on mortality equivalent to a single death brought forward per year to be quantifiable.](#) To put this into context, this is equivalent to [a third of the population](#) of Newham (318,000) living at R5.
- 5.23 The change in concentration exposure associated with the proposed CADP is therefore lower than is required to quantify any meaningful change in health outcome, as is relative community exposure.
- 5.24 Given that both the With and Without CADP scenarios will remain within PM<sub>10</sub> and PM<sub>2.5</sub> air quality standards set to protect health, and that relative changes in local concentration exposure are not of a level to quantify any significant change in health outcome, it is concluded that the proposed CADP does not constitute any meaningful risk to local community, passenger or visitor health from changes in PM<sub>10</sub> and PM<sub>2.5</sub> exposure.

## Nitrogen Dioxide

- 5.25 As detailed in Chapter 9 of the [UES](#), changes in NO<sub>2</sub> annual mean concentrations are primarily associated with changes in road surface movements to and from the Airport, yet remain within air quality standards set to protect health at all receptors for both the With and Without CADP scenarios.
- 5.26 As shown in Table 5.3, the highest changes in NO<sub>2</sub> annual mean are at R5, increasing by 1.5 µg/m<sup>3</sup> in 2020 (or 1.7 µg/m<sup>3</sup> when not applying official emission reduction factors), [2.3µg/m<sup>3</sup> in 2023 \(for both the Higher Passenger Case and the Faster Move to Jets Case\)](#), and to 2.6 µg/m<sup>3</sup> in 2025. This is due to a combination of airport activities and the creation of an additional vehicle access point to the airport and parking area. As detailed in Chapter 7 of the [UES](#), the [change in concentration relative to the air quality objectives](#) are nearly all considered to be negligible, with the exception of the increase at R5, which is described as slight adverse (but still below the objective).

43 The Health Protection Agency for the Committee on the Medical Effects of Air Pollutants. (2009). Long-Term Exposure to Air Pollution: Effect on Mortality.

44 WHO, "Health risks of air pollution in Europe - HRAPIE project. Recommendations for concentration-response functions for cost-benefit analysis of particulate matter, ozone and nitrogen dioxide.," WHO Regional Office for Europe, Copenhagen, 2013.

5.27 Minor reductions in annual mean NO<sub>2</sub> are also anticipated at R1, R2, R40 and R41 between -0.1 and -0.5 µg/m<sup>3</sup>, due to the offset of vehicles along new access points.

**Table 5.3: Difference in Annual Mean NO<sub>2</sub> between With and Without Scheme Scenarios**

Receptor Number	Difference in NO <sub>2</sub> Annual Mean (µg/m <sup>3</sup> ) <sup>a</sup>					
	Difference between With and Without CADP 2020		Difference between With and Without CADP 2023		Difference between With and Without CADP 2025	
	With Emissions Reductions	Without Emissions Reductions	Higher Passenger Case	Faster Move to jets Case	Higher Passenger Case	Faster Move to jets Case
R1	-0.1	-0.4	0.1	0.2	0.2	0.3
R2	-0.2	-0.4	0.0	0.1	0.1	0.2
R3	0.2	0.1	0.6	0.6	0.7	0.7
R4	0.9	0.8	1.8	1.9	2.1	2.2
R5	1.5	1.7	2.3	2.3	2.6	2.6
R6	0.9	1.1	1.2	1.2	1.2	1.3
R7	0.5	0.8	0.6	0.6	0.6	0.6
R8	1.0	1.7	1.0	1.0	0.9	0.9
R9	0.7	1.2	0.7	0.7	0.7	0.7
R10	0.1	0.1	0.4	0.4	0.5	0.5
R11	0.1	0.0	0.4	0.4	0.5	0.5
R12	0.1	0.0	0.4	0.5	0.5	0.6
R13	0.1	0.2	0.3	0.2	0.3	0.2
R14	0.1	-0.1	0.5	0.5	0.7	0.7
R15	0.1	0.2	0.3	0.3	0.3	0.3
R16	0.3	0.1	1.0	1.0	1.2	1.3
R17	0.5	0.7	0.7	0.8	0.8	0.8
R18	0.3	0.4	0.7	0.9	0.9	1.1
R18 (20m)	0.3	0.3	0.6	0.8	0.8	0.9
R19	0.1	0.1	0.1	0.1	0.1	0.1
R19 (20m)	0.1	0.1	0.1	0.1	0.1	0.1
R20	0.1	0.1	0.1	0.1	0.1	0.1
R20 (20m)	0.1	0.1	0.1	0.1	0.1	0.1
R21	0.3	0.2	0.5	0.6	0.6	0.7
R22 (20m)	0.3	0.4	0.5	0.6	0.6	0.6
R22 (40m)	0.2	0.2	0.3	0.3	0.4	0.4
R23	0.4	0.5	0.5	0.6	0.6	0.7
R23 (20m)	0.2	0.2	0.4	0.5	0.5	0.5
R24	0.3	0.3	0.4	0.5	0.5	0.5
R24 (20m)	0.2	0.2	0.3	0.4	0.4	0.5
R25	0.4	0.4	0.8	0.9	0.9	1.0
R25 (10.5m)	0.4	0.4	0.7	0.9	0.9	1.0
R26	0.9	1.5	0.9	0.9	0.9	0.9
R26 (10.5m)	0.3	0.5	0.4	0.4	0.4	0.4
New Receptors						
R27	0.3	0.3	0.2	0.3	0.1	0.2
R27 (20m)	0.2	0.2	0.3	0.4	0.3	0.4
R28	0.2	0.1	0.2	0.3	0.3	0.3

Receptor Number	Difference in NO <sub>2</sub> Annual Mean (µg/m <sup>3</sup> ) <sup>a</sup>					
	Difference between With and Without CADP 2020		Difference between With and Without CADP 2023		Difference between With and Without CADP 2025	
	With Emissions Reductions	Without Emissions Reductions	Higher Passenger Case	Faster Move to jets Case	Higher Passenger Case	Faster Move to jets Case
R28 (20m)	0.1	0.1	0.2	0.3	0.3	0.3
R29	0.2	0.2	0.3	0.3	0.3	0.3
R29 (20m)	0.2	0.2	0.3	0.3	0.3	0.4
R30	0.2	0.2	0.3	0.3	0.3	0.3
R30 (20m)	0.1	0.2	0.3	0.3	0.3	0.3
R31	0.2	0.2	0.3	0.3	0.3	0.3
R31 (20m)	0.1	0.2	0.3	0.3	0.3	0.3
R32	0.2	0.2	0.4	0.5	0.5	0.6
R32 (20m)	0.2	0.2	0.4	0.4	0.4	0.5
R33	0.6	0.6	1.3	1.4	1.6	1.7
R33 (20m)	0.5	0.5	1.1	1.2	1.3	1.4
R34	0.2	0.0	0.5	0.6	0.7	0.8
R35	0.2	0.1	0.3	0.4	0.3	0.4
R35 (20m)	0.2	0.1	0.3	0.3	0.3	0.4
R36	0.2	0.2	0.3	0.4	0.4	0.4
R36 (20m)	0.1	0.1	0.2	0.3	0.3	0.3
R37	0.2	0.1	0.3	0.4	0.4	0.4
R38	0.1	0.1	0.2	0.2	0.2	0.2
R39	-0.1	-0.2	0.1	0.1	0.1	0.1
R39 (10.5m)	0.0	0.0	0.1	0.2	0.2	0.2
R40	-0.3	-0.5	-0.1	-0.1	0.0	0.0
R40 (20m)	0.1	0.1	0.1	0.2	0.2	0.2
R41	-0.1	-0.2	0.1	0.1	0.1	0.1
R41 (13.5m)	0.1	0.0	0.1	0.2	0.2	0.2
<b>For the complete Air Quality Dispersion model outputs, please refer to Chapter 9 of the UES</b>						
<sup>a</sup> Values reported as 0.0 = changes in concentration between -0.05 and 0.05 µg/m <sup>3</sup> .						

5.28 As detailed in the original HIA, COMEAP did not consider the evidence on NO<sub>2</sub> to be sufficiently robust for quantification at the time and a sensitivity analysis was applied. Since then, research has progressed and evidence has emerged reinforcing associations of ambient concentrations of NO<sub>2</sub> with a range of effects on health. These associations have been derived after accounting for a number of factors, including adjustment for other pollutants, in particular particulate matter (HRAPIE allows for a 33% health outcome overlap with PM<sub>2.5</sub>, whereas the Faustini meta-analysis<sup>45</sup> indicates a long-term effect of NO<sub>2</sub> on mortality as great as that of PM<sub>2.5</sub> with an independent effect of NO<sub>2</sub> emerging from multi-pollutant models)

45 A. Faustini, R. Rapp and F. Forastiere, "Nitrogen dioxide and mortality: review and meta-analysis of long-term studies," European Respiratory Journal, vol. 44, no. 3, pp. 744-753, 2014.

- 5.29 While COMEAP recognises the new evidence base, the formal position has not materially changed<sup>46</sup>, where COMEAP has stated that:

*“We have not drawn conclusions on specific health outcomes nor looked in detail at the methodological issues relevant to quantification of effects associated with ambient NO<sub>2</sub> at this stage. We intend to do this and, if appropriate, to consider recommendations for coefficients associating NO<sub>2</sub> with specific health effects, as part of separate work items to be addressed later”.*

- 5.30 Exposure response coefficients published by the WHO HRAPIE<sup>47</sup> and Faustini can now be applied to quantify the change in the background rate of all-cause mortality per 10 µg/m<sup>3</sup> increase in NO<sub>2</sub>. However, caution is required, as the outputs may include an element of overlap with other pollutants, including those previously assessed.
- 5.31 Applying the maximum change in NO<sub>2</sub> (2.6 µg/m<sup>3</sup> at receptor 5, based on un-rounded numbers) and the 30+ Newham baseline mortality rate of 1,238 per 100,000 and applying the central estimates for both the Hoek and Faustini exposure concentration-response functions (CRF), between 14,000-18,000 of typical London Borough of Newham residents would need to reside at receptor 5 in order for an effect on mortality equivalent to a single death brought forward per year to be quantifiable.
- 5.32 The assessment significantly overestimates potential exposure, and concentrations at all other existing receptors are lower than those assessed.

## Noise

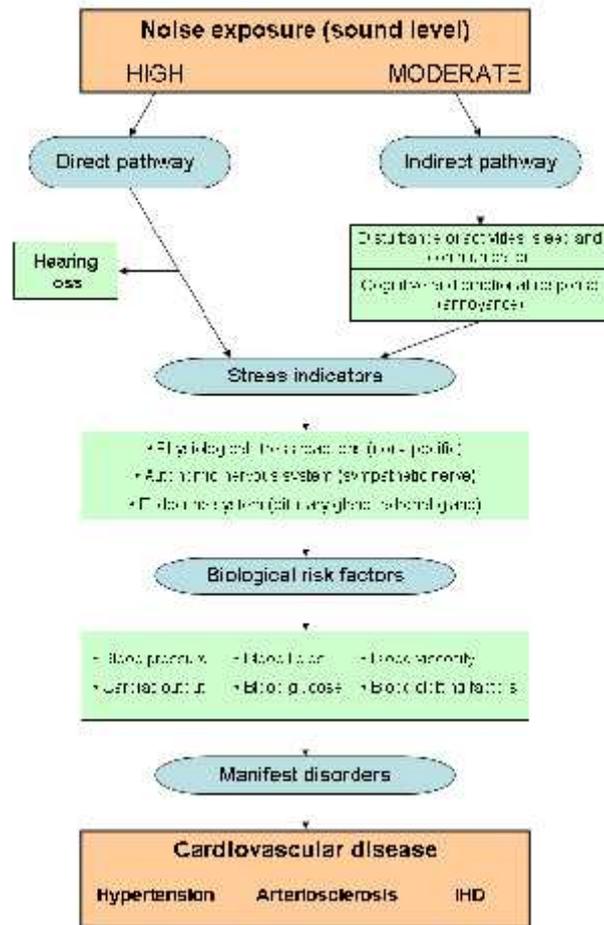
- 5.33 Noise has the potential to affect health in a variety of ways; some of which can be auditory and occur as a direct impact of the noise. Direct auditory effects usually result in damage to the ear, in particular damage to the inner ear from intense and prolonged exposure, which is not relevant for the proposed CADP. Such risks are usually associated with occupational health or prolonged exposure to loud music and managed through good working practice and the provision of appropriate personal protective equipment. Figure 5.1 illustrates the various ways in which noise can affect health.

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46 COMEAP (2015) Statement on the Evidence for the Effects of Nitrogen Dioxide on Health. Available at [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/411756/COMEAP\\_The\\_evidence\\_for\\_the\\_effects\\_of\\_nitrogen\\_dioxide.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/411756/COMEAP_The_evidence_for_the_effects_of_nitrogen_dioxide.pdf) last accessed 14/08/2015

47 WHO, "Health risks of air pollution in Europe - HRAPIE project. Recommendations for concentration-response functions for cost-benefit analysis of particulate matter, ozone and nitrogen dioxide.," WHO Regional Office for Europe, Copenhagen, 2013.

**Figure 5.1: The Noise Health Pathway**



Source: Good Practice Guide on Noise Exposure and potential health effects <sup>48</sup>

5.34 There are a wide range of non-auditory health effects that may be associated with exposure to environmental noise, although the pathways and strength of association for these are not fully understood. Examples of non-auditory health effects include:

- annoyance;
- mental health;
- cardiovascular and physiological;
- performance (tasks and academic); and
- night time effects (sleep disturbance).

5.35 In respect to the control of health effects from noise, the Noise Policy Statement for England (NPSE) provides the framework for noise management decisions to be made that ensure noise levels do not place an unacceptable burden on society within the context of Government policy on sustainable development.

5.36 The stated aims of the Noise Policy Statement for England (NPSE) are to:-

- a) Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development;

48 European Environment Agency. (2010). Good Practice Guide on Noise Exposure and Potential Health Effects.

- b) Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development; and
  - c) Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.
- 5.37 The NPSE introduces the concepts of NOEL (No Observed Effect Level), LOAEL (Lowest Observed Adverse Effect Level) and SOAEL (Significant Observed Adverse Effect Level). The definition of each is as follows:-
- a) NOEL – No observed effect level. This is the level below which no effect can be detected.
  - b) LOAEL – Lowest observed adverse effect level. This is the level above which adverse effects on health and quality of life can be detected.
  - c) SOAEL – Significant observed adverse effect level. This is the level above which significant adverse effects on health and quality of life occur.
- 5.38 The advice is that noise above the SOAEL should be avoided using appropriate mitigation while taking into account the guiding principles of sustainable development.
- 5.39 Where noise is between LOAEL and SOAEL, the advice is to take all reasonable steps to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development. Noise in this category is described as an observed adverse effect which is noticeable and intrusive.
- 5.40 The noise effects of CADP are considered in respect of these health effects and quality of life indicators below and within UES Chapter 8.

### **Construction Noise**

- 5.41 As detailed in Chapter 8 of the UES (Noise and Vibration), the construction of the proposed CADP will occur intermittently over a significant period of time, giving rise to noise and vibration with the potential to cause disruption to local communities around the Airport, and during the night when some of the works will take place (due to constraints during the operation of the airport).
- 5.42 The construction of the proposed CADP will build upon the programme and techniques applied during previous infrastructure works at the Airport (such as the construction of the Eastern Apron), which managed environmental and noise impacts (including night time periods) effectively, with minimal community complaints.
- 5.43 In accordance with the Noise Policy Statement for England (NPSE), Chapter 8 provides a consideration of the adverse environmental effects of noise due to the CADP, as against the Without CADP case, as well as the impact of noise on health and quality of life. The latter is achieved by a consideration of how construction activities relate to both the lowest and significant observed adverse effect levels (LOAEL and SOAEL respectively) introduced in the NPSE.
- 5.44 As detailed in Chapter 8 of the UES, noise levels have been modelled at representative receptors, for each phase of construction during the day and night as well as at over 2000 receptors to evaluate the effects of construction noise during Out of Operational Hours (OOOH) including the night.

- 5.45 During Year 1, no significant adverse impacts are predicted for daytime working hours, where noise sources are a considerable distance from the nearby communities and will remain below 65 dB  $L_{Aeq,T 10/5h}$  at all receptors, the daytime LOAEL.
- 5.46 During Year 3 (the peak construction year), no significant adverse impacts are predicted for daytime working hours from the Airport works, with minor impacts limited to landside infrastructure works close to residential properties, including 40 Newland Street, 86 Winifred Street Flats and 32 Brixham Street.
- 5.47 During Year 6 no significant adverse impacts are predicted.
- 5.48 Prior to mitigation, potential health impacts from construction noise are limited to annoyance and potential intermittent sleep disturbance from landside construction activities in proximity to communities.
- 5.49 The construction programme has been amended during the planning process. In response to feedback from the local planning authority (LBN), significant improvements were made to the construction methodology and sequence of works which are now reflected in the *Updated Construction Programme*. These were reported in the CES and CESA of November 2014, and included a substantial reduction in Out of Operational Hours (OOOH) working compared to the construction programme presented and assessed in the July 2013 ES. Further details are included in Chapter 6 of the UES.
- 5.50 The re-assessment of night construction noise has found that, for the majority of the construction period, only a small number of receptors to the south of the Airport may exceed noise levels in excess of 55 dB  $L_{Aeq,15min}$ , the indicative SOAEL value. These are generally high level (2nd floor and above) receptors of properties closest to the works. A more significant number are exposed to levels between 50 and 55 dB  $L_{Aeq}$  (between the LOAEL and SOAEL). The vast majority of these properties will already be protected as a result of treatment under the Airport's (First Tier) Sound Insulation Scheme (SIS). Moreover, the Airport will offer those properties that previously refused the Airport's offer, a further opportunity to accept the works ahead of carrying out noisy night time works.
- 5.51 The construction activities during the weekend OOOH periods will also be carefully managed by way of the Construction Noise and Vibration Management and Mitigation Strategy (CNVMMS) to minimise the number of receptors exposed to noise levels at or above 55 dB  $L_{Aeq,1h}$ . The approach will be to ensure that, where necessary, the highest noise producing activities associated with daytime weekend OOOH working do not occur at the same time or in the same vicinity as those associated with piling. For more information on the CVNMMS please refer to Appendix 8.22 of the UES.
- 5.52 In addition to existing mitigation provided through the Airport's enhanced sector-leading Sound Insulation Scheme (providing insulation for eligible properties including schools and residential properties within the 57 dB  $L_{Aeq,16h}$  contour associated with the onset of significant community disturbance), proposed mitigation to address such impacts include:
1. Community relations: Keeping local people informed of progress, particularly noisy construction activities, treating complaints fairly and expediently;

2. Site Personnel Training: informing site personnel as to local communities and sensitive receptors, and directing the proper use and maintenance of tools and equipment and the positioning of machinery to reduce noise emission to the neighbourhood;
3. Site Location: Setting noise emission limits with due regard to the proximity of noise sensitive premises and receptors;
4. Duration of Site Operations: Local residents may be willing to accept higher levels of noise if they know that such levels will only last for a short time: notification of particularly noisy site operations will be provided, and be carried out according to a stated schedule; and
5. Type of Plant: Consideration should be given to using quiet techniques taking account of practical site constraints and best practicable means.

5.53 As detailed in the Chapter 8 of the UES, following mitigation, construction noise is not of an order of magnitude sufficient to quantify any significant adverse health outcome, with impacts limited to potential annoyance at specific properties. On-going engagement with local communities will therefore be key to managing any residual impacts, and enabling local residents to address temporary and intermittent disruption.

## Air Noise

5.54 The proposed CADP does not seek to increase the permissible number of aircraft movements or noise factored movements (both currently 120,000 per annum), nor will there be any change in operational hours over those currently in place (i.e. no change in night flights) or change in high approach glide slope.

5.55 Changes in operational noise therefore come about through the change in aircraft that the new infrastructure will accommodate (as these aircraft will give rise to changes in noise and vibration effects); and changes in Airport configuration.

5.56 A number of reports summarise recent studies<sup>49, 50</sup> on the potential effects of aircraft noise on health. Aircraft noise, as with other sources of noise, has been found to give rise to observed health effects above a certain threshold level. The threshold level above which an observed health effect is likely to occur will vary depending on the effect under consideration.

5.57 The air noise assessment adopts the following:

LOAEL:            54 dB  $L_{Aeq,16h}$             (alias 55 dB  $L_{den}$ )

SOAEL:            63 dB  $L_{Aeq,16h}$             (alias 65 dB  $L_{den}$ )

5.58 The assessment of air noise finds that people are already (in 2014) exposed to higher noise levels than 63 dB (the threshold of moderate levels of significant community annoyance and adverse impacts, considered to be indicative of the SOAEL). By 2025, without CADP, the predicted increases in noise will bring some additional receptors into the 63 dB noise category (totalling

<sup>49</sup> Aircraft noise effects on health, Prepared for the Airports Commission, Queen Mary University of London, Dr Charlotte Clark, Draft 3 – 7<sup>th</sup> May 2015

<sup>50</sup> Aircraft Noise, Sleep Disturbance and Health Effects: A Review, ERCD Report 1208, Civil Aviation Authority

around 700). With CADP, the slight additional increase in noise forecast will bring in an estimated additional 100 dwellings (excluding permitted developments).

- 5.59 Further away from the Airport, where the absolute levels of noise will be lower; increases are expected to remain small. These increases with CADP as compared to without are less than 1 dB giving rise to **no significant adverse impact**.
- 5.60 The potential effects of air noise with respect to cardiovascular, annoyance, sleep disturbance and academic response effects are discussed below.

### Cardiovascular Health

- 5.61 Over the past 10 years, there has been a significant increase in the body of evidence indicating that aircraft noise exposure leads to an increased risk for poorer cardiovascular health.
- 5.62 A recent study<sup>51</sup> around London Heathrow airport examined risks for hospital admission and mortality for stroke, coronary heart disease and cardiovascular disease for around 3.6 million people living near London Heathrow airport. Both daytime ( $L_{Aeq,16h}$ ) and night-time ( $L_{night}$ ) aircraft noise exposure were related to increased risk for a cardiovascular hospital admission. Compared to those exposed to aircraft noise levels below 51 dB in the daytime, those exposed to aircraft noise levels over 63 dB in the daytime had the following higher chance of a hospital admission:
- 24% for a stroke
  - 21% for coronary heart disease
  - 14% for cardiovascular disease
- 5.63 Similar effects were also found between aircraft noise exposure and mortality for stroke, coronary heart disease and cardiovascular disease.
- 5.64 A more recent study<sup>52</sup> involving a study population of 8.6 million inhabitants of London, concentrating on road traffic noise, also found evidence that long-term exposure to road traffic noise was associated with small increased risks of all-cause mortality and cardiovascular mortality and morbidity in the general population, particularly for stroke in the elderly. For the study population, this found that the median daytime exposure to traffic noise was 55.6 dB. The daytime road traffic noise increased the relative risk of hospital admission for stroke by 5% in adults, and 9% in the elderly in areas exposed to more than 60 dB as compared to areas exposed to less than 55 dB.
- 5.65 The Airport's Sound Insulation Scheme, which offers protection to eligible properties at a threshold level starting at 57 dB  $L_{Aeq,16h}$ , the lowest daytime criterion offered by any airport in the UK currently, will assist in mitigating any such effects that might arise from aircraft noise. Therefore, in conclusion with regard to cardiovascular health, no significant adverse health outcome is predicted with respect to air noise and other sources of noise associated with the CADP.

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<sup>51</sup> Aircraft noise and cardiovascular disease near Heathrow airport in London: small study area. Hansell et al (2013); British Medical Journal, 347, f5432

<sup>52</sup> Road traffic noise is associated with increased cardiovascular morbidity and mortality and all-cause mortality in London, Halonen, Hansell, et al, London School of Hygiene and Tropical Medicine, European Heart Journal Advance Access, June 2015.

## Annoyance

- 5.66 Annoyance is the most prevalent community response in a population exposed to environmental noise. It is affected not just by acoustical factors but also other factors such as the fear associated with the noise source, interference with activities, ability to cope, expectations and attitudes to the source.
- 5.67 As defined in the Civil Aviation Authority (CAA) Guidance<sup>53</sup>, the calculation of the total number of people likely to be 'highly annoyed' is achieved by multiplying the number of people within each 3 dB contour band by the appropriate percentage provided in Table 5.4.

**Table 5.4: CAA Percentage of Highly Annoyed People (Daytime Aircraft Noise)**

Noise Contour Band	Mid Points of dB LA <sub>eq</sub> 3 dB Intervals	Percentage Highly Annoyed
54-57	55.5	6.6
57 - 60	58.5	11.1
60 – 63	61.5	18.0
63 - 66	64.5	28.0
66 - 69	67.5	40.7
69 – 72	70.5	54.9
72 - 75	73.5	68.2

- 5.68 As detailed in Chapter 8 of the UES, changes in operational noise levels have been modelled between the With and Without CADP scenarios for 2020, 2023 and 2025. The noise contours were then applied to establish the number of existing and permitted residential dwellings that would be subject to changes in noise, and a population factor applied to indicate the total number of residents within such dwellings.
- 5.69 As shown in Table 5.5 below, prior to mitigation and not accounting for the Airport's Sound Insulation Scheme (including the enhancements to the sound insulation already provided), the greatest change in high annoyance between the With and Without CADP scenarios is for populations within the 54, 57 and 60dB contours, with a far smaller increase in those 'highly annoyed' in the 63 and 66 dB contours up to 2025 for the existing population.

**Table 5.5: Difference in Population 'Highly Annoyed' between Scenarios**

Noise Contour Band, L <sub>Aeq,16h</sub> dB	% Highly Annoyed	2020	2023	2025
		Difference	Difference	Difference
54 – 57	6.6%	250	200	150
57 – 60	11.1%	300	300	250
60 – 63	18.0%	200	250	250
63 – 66	28.0%	50	50	50
66 – 69	40.7%	50	50	50
69 – 72	54.9%	0	0	0
72 – 75	68.2%	0	0	0

- 5.70 It should be noted that the CAP 725 guidance is based on the percentage of a community who are highly annoyed by air noise. By its definition there will be a higher percentage of the community who are not annoyed by air noise and therefore the significance of these results should be treated with caution.
- 5.71 Recent studies indicate that people appear to be becoming more sensitive to noise and that the annoyance ratings identified above may no longer reflect accurately the percentage of people likely to be 'highly annoyed' by a given level of noise.
- 5.72 The Government also acknowledges research in recent years which suggests that the balance of probability is that people are now relatively more sensitive to aircraft noise than in the past, though there is insufficient evidence to indicate a clear threshold noise level denoting the 'onset of significant community annoyance'. The Government have therefore retained the 57 dB  $L_{Aeq,16h}$  contour as the average level of daytime aircraft noise marking the approximate onset of significant public annoyance. The above annoyance ratings are consistent with this approach.
- 5.73 It is important to consider that airport policy is to provide eligible residential units which fall within the 57 dB  $L_{Aeq,16h}$  contour (associated with the onset of significant community disturbance) with sound insulation treatment, if adequate levels of sound insulation are not already in place. This threshold of sound insulation at LCY is currently the lowest for any UK airport and significantly lower than the Government's recommended threshold of 63 dB  $L_{Aeq,16h}$ .
- 5.74 Under the CADP, in recognition of the fact that air noise emissions will increase slightly as compared to Without CADP, the Sound Insulation Scheme will be upgraded to offer additional benefits to those affected by noise from the Airport. The Airport proposes under CADP to improve the First Tier of works, introduce an Intermediate Tier of treatment, and also to upgrade the Second Tier to further protect those most affected by noise.
- 5.75 The First Tier of works will be improved by ensuring any existing single glazed properties that are eligible under the scheme will be offered 100% of the cost for replacement standard thermal glazed windows or secondary glazing, whichever is preferred, together with acoustic ventilation. Currently, only secondary glazing and vents are available to these single glazed properties.
- 5.76 For those most affected, that is those that become exposed to air noise at the Second Tier Eligibility Criterion of 66 dB  $L_{Aeq,16h}$ , they are currently offered improved secondary glazing or a monetary contribution of equivalent value towards high acoustic performance thermal double glazing, together with acoustic ventilation. The Airport will therefore enhance the scheme to offer improved secondary glazing or a 100% contribution towards high performance double glazing, together with acoustic ventilation. This will ensure that all of those most affected by noise are afforded the maximum noise protection opportunity.
- 5.77 In addition, to take account of recent emerging guidance concerning the level above which aircraft noise can give rise to a significant observed adverse effect (SOAEL) on health and quality of life, for those residential properties that are already or become exposed to air noise at a level of 63 dB  $L_{Aeq,16h}$ , an offer of secondary glazing and acoustic ventilation will be made or alternatively,

a contribution of £3,000 towards high performance acoustic double glazing and acoustic vents. This additional tier of works will be eligible to all existing dwellings exposed currently to 63 dB or more as well as any existing dwellings that come into the eligibility noise contour in the future.

5.78 The Airport operates a scheme where any new residential developments within the 57 dB or 66 dB  $L_{Aeq,16h}$  noise contours, which received Planning Permission as of 9th July 2009, but have not yet been built out, will benefit from a noise insulation payment scheme. This funds any additional works anticipated as a result of the Airport's planning approval, over and above any pre-agreed planning conditions with regard to external sound insulation. This condition will be carried over to any Planning Permission for the proposed CADP.

5.79 In addition, the Airport will continue to maintain and to enhance, wherever possible, operational measures that helps to adequately control air noise effects. Such measures include:

1. maintaining restrictions on flights outside the daytime period;
2. the restriction that all aircraft operating at the Airport must lie within one of the categories or noise limits set out in the Aircraft Categorisation System as agreed with the London Borough of Newham. All such aircraft will meet the ICAO Chapter 4 limits;
3. the continued operation of a Noise Monitoring and Flight Track Keeping System;
4. maintaining a public noise complaint handling service;
5. maintaining an Airport Consultative Committee;
6. encouraging aircraft operators to adopt quiet operating procedures and to observe published noise abatement procedures;
7. maintaining Preferred Noise Routes;
8. maintaining an Approach Glide Slope of 5.5 degrees for all aircraft;
9. maintaining an [enhanced three tier Sound Insulation Scheme \(as described above\)](#); and
10. maintaining a Purchase Offer for properties that lie within the high annoyance contour (69 dB) in line with Government recommendations.

5.80 On the above basis, following mitigation, the risk of potential annoyance will be significantly reduced.

## **Sleep Disturbance**

5.81 [Sleep disturbance is considered by the World Health Organisation to be the most adverse non-auditory effect of environmental noise exposure. Undisturbed sleep of a sufficient number of hours is considered necessary for alertness and performance during the day, for quality of life and for health.](#)

5.82 [Humans exposed to sound whilst asleep still have physiological reactions to the noise which do not adapt over time including changes in breathing, body movements, heart rate, as well as awakenings<sup>54</sup>.](#)

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<sup>54</sup> Auditory and non-auditory effects of noise on health. Babisch et al (2104); Lancet, 383, 1325-1332

5.83 Chapter 8 of the UES sets out WHO guideline criteria for the protection of public health from night noise:-

Night noise guideline (NNG)  $L_{\text{night, outside}} = 40 \text{ dB}$

Interim target (IT)  $L_{\text{night, outside}} = 55 \text{ dB}$

5.84 The proposed CADP will not seek to alter the current operational flying hours as permitted in the Planning Agreement, where agreed night time (23.00 to 6.00 hours) operations are limited to a small number of movements during the 06.30 to 07.00 hours slot. On this basis, the proposed CADP will not impact upon night time sleep disturbance.

## Academic Performance

5.85 As detailed in Chapter 8 of the UES, and summarised in Table 5.6 below, noise exposure levels resulting from aircraft will be modest and in keeping with the prevailing ambient noise level, where relative changes at modelled receptors are at most marginal.

**Table 5.6: Difference in Air Noise levels at Schools and Colleges ( $L_{\text{Aeq},16\text{h}}$ )**

School	2020	2023	2025
Britannia Village Primary School	0	0	0
Calverton Primary School	1	1	1
Chestnut Nursery School/Tollgate Primary School	0	0	0
Culloden Primary School	0	0	0
Discovery Primary School and Childrens Centre	0	0	0
Drew Primary School	0	1	1
Edith Kerrison Nursery School and Childrens Centre/Rosetta Primary School	0	0	0
Faraday School, Trinity Buoy Wharf	0	0	0
Gallions Primary School	0	0	0
Hallsville Primary School	0	0	0
Hawksmoor Primary School	0	0	0
Jubilee Primary School	0	0	0
Langdon Park School	0	0	0
Leapfrog Day Nursery	0	0	0
Linton Mead Primary School	0	0	0
Manorfield Primary School	0	0	0
My Nursery	1	1	0
O'Farrels Stage School	0	0	0
Richard House Children's Hospice	0	0	0
St Joachim's R.C. Primary School	0	0	0
St Luke's CEVA Primary and Nursery School	0	0	0
St Margaret Clitherow RC Primary School	1	1	1
Thamesmead School of Dance	1	1	1
The Royal Docks Community School	1	1	1
Windrush Primary School	0	0	0
Winsor Primary School	1	1	1
Woolmore Primary School	0	0	0
University of East London	1	1	1
Woolwich Polytechnic for Boys	1	0	0
Storey Road School	1	1	1
Woodman Community Centre	0	0	0

- 5.86 The RANCH study researched the effects of road traffic and aircraft noise on the cognitive performance and health of children. During this study, aircraft noise exposure was associated with a linear exposure-effect association with reading comprehension, episodic memory and working memory. It was estimated that a 5 dB (A) increase in noise was associated with a 2-month impairment in reading age of UK children aged 9-10.
- 5.87 It should be noted that the RANCH study typically measured changes in cognitive performance in 5 dB (A) increments. In this instance, the potential change in noise exposure at all of the modelled schools is below what is generally considered perceptible. Therefore, the predicted increases in noise are not of a level to quantify any impact on academic performance.
- 5.88 For those schools and colleges experiencing relatively high levels of noise currently, such as Drew Primary School and the University of East London, these have already been built or insulated to cope with higher noise levels from the Airport.
- 5.89 On the above basis, the proposed CADP does not present a significant impact upon local academic performance. The Airport will continue to engage with local academic institutes to iteratively inform and enhance operational activities and best practice in the way it operates.

## Ground Noise

- 5.90 Changes in Airport infrastructure and operations will alter the characteristics of daytime ground noise and consequent exposure to surrounding communities. As detailed in Chapter 8 of the [UES](#), ground noise has been calculated during the busy summer daytime period for a range of With and Without development scenarios, [including](#).
- a) [2020 Without CADP core case development](#)
  - b) [2020 transitional assessment year with interim phase of CADP development built \(i.e. 3 no. additional stands and extension to noise barrier\)](#)
  - c) [2023 without CADP core case development](#)
  - d) [2023 Design Year with full CADP core case development](#)
  - e) [2025 Without CADP core case development](#)
  - f) [2025 Principal Assessment Year with full CADP core case development](#)
  - g) [2025 Principal Assessment Year with CADP Faster Move to Jets scenario](#).
- 5.91 [The ground noise assessment in Chapter 8 adopts the following: \\_](#)

[LOAEL:](#)            [50 dB  \$L\_{Aeq,16h}\$](#)

[SOAEL:](#)            [60 dB  \$L\_{Aeq,16h}\$](#)

- 5.92 [Baseline conditions vary for receptors close to the Airport. The majority are currently exposed to negligible or minor noise impacts. A small proportion are currently exposed to significant levels of ground noise with a small number currently exposed to substantial levels of baseline ground noise, above the SOAEL. The CADP works will change the ground noise levels around the airport. A reduction in ground noise is predicted at some receptors. An increase is predicted at others.](#)

- 5.93 With CADP complete, around an additional 40 receptors experience a significant substantial absolute level, above the SOAEL, as compared to the Without CADP scenario.
- 5.94 Noise sensitive receptors around the airport comprise both recently constructed buildings and those constructed long before the airport was operational. Nearby receptors will have either been offered mitigation works through the Sound Insulation Scheme or have been required to incorporate adequate sound insulation measures as required by planning condition to meet local standards.
- 5.95 Potential impacts are to be managed through current operational procedures and the enhanced three tier Sound Insulation Scheme (described above), and are not of a level to quantify any measurable adverse health outcome.

## Transport Noise

- 5.96 The proposed CADP does not seek to increase the permissible number of aircraft movements although the modernisation of the fleet is expected to bring larger aircraft and, as a result, the potential for more passenger throughput and a consequent increase in surface access transport.
- 5.97 The road traffic noise assessment in Chapter 8 adopts the following for daytime:

LOAEL: 55 dB  $L_{Aeq,16h}$  (alias 60 dB  $L_{A10,18h}$  façade level)

SOAEL: 63 dB  $L_{Aeq,16h}$  (alias 68 dB  $L_{A10,18h}$  façade level)

- 5.98 For night-time, in line with World Health Organisation guidance, 55 dB  $L_{Aeq,8h}$  is adopted for road traffic as an indicative value for SOAEL at night. A figure of 45 dB  $L_{Aeq,8h}$  (free field) is adopted as an indicative value for LOAEL at night, based on the principle of maintaining an internal noise level of 30 dB  $L_{Aeq}$  in a bedroom at night (in accordance with BS 8233), with a window partly open.
- 5.99 For the relatively few properties that are located within 10 metres of local roads around the airport, the absolute noise levels are currently sufficiently high as to give rise to a substantial impact, where levels exceed the SOAEL currently during the day. However, most properties are located farther back from the roads than 10 metres, where road traffic noise levels are lower with correspondingly less impact. Also, a proportion of those properties will have received treatment under the Airport's Sound Insulation Scheme.
- 5.100 As detailed in Chapter 8 of the UES, and summarised in Table 5.7, the introduction of the CADP, as compared to without CADP, will have a negligible effect on the majority of receptors. However, properties on Woodman Street closest to the new eastern access road are predicted to be exposed to a major relative increase in noise due to the new traffic source.

**Table 5.7: Difference in Transport Noise ( $L_{A 10,18h}$ )**

Receptor	Difference in dB	Long Term Impact
<b>2020</b>		
Connaught Bridge	0.2	Negligible
Connaught Bridge PH (A)	0.1	Negligible
Hartman Road	-1.5	Negligible

Receptor	Difference in dB	Long Term Impact
2 Camel Road (B)	-1.6	Negligible
Connaught Road	-0.8	Negligible
Connaught Road (C)	-0.8	Negligible
Royal Albert Way East	-0.5	Negligible
Royal Albert Way East (D1)	-0.6	Negligible
Royal Albert Way East (D2)	-0.5	Negligible
Royal Albert Way West	-0.7	Negligible
Royal Albert Way West (E)	-0.7	Negligible
Woolwich Manor Way	1.5	Negligible
Woolwich Manor Way (F1)	1.5	Negligible
Woolwich Manor Way (F2)	0.7	Negligible
29 Woodman St (G)	10	Major
<b>2023</b>		
Connaught Bridge	0.2	Negligible
Connaught Bridge PH (A)	0.2	Negligible
Hartman Road	-1.2	Negligible
2 Camel Road (B)	-1.1	Negligible
Connaught Road	-0.9	Negligible
Connaught Road (C)	-0.9	Negligible
Royal Albert Way East	-0.6	Negligible
Royal Albert Way East (D1)	-0.6	Negligible
Royal Albert Way East (D2)	-0.6	Negligible
Royal Albert Way West	-0.5	Negligible
Royal Albert Way West (E)	-0.6	Negligible
Woolwich Manor Way	1.7	Negligible
Woolwich Manor Way (F1)	1.6	Negligible
Woolwich Manor Way (F2)	0.8	Negligible
29 Woodman St (G)	10	Major
<b>2025 Faster Move to Jets</b>		
Connaught Bridge	0.0	No change
Connaught Bridge PH (A)	0.0	No change
Hartman Road	0.0	No change
2 Camel Road (B)	0.0	No change
Connaught Road	0.0	No change
Connaught Road (C)	0.0	No change
Royal Albert Way East	0.0	No change
Royal Albert Way East (D1)	0.0	No change
Royal Albert Way East (D2)	0.0	No change
Royal Albert Way West	0.0	No change
Royal Albert Way West (E)	0.0	No change
Woolwich Manor Way	0.0	No change
Woolwich Manor Way (F1)	0.0	No change
Woolwich Manor Way (F2)	0.8	Negligible
29 Woodman St (G)	0.0	No change
<b>2025 Higher Passenger</b>		
Connaught Bridge	0.1	Negligible
Connaught Bridge PH (A)	0.1	Negligible
Hartman Road	0.4	Negligible
2 Camel Road (B)	0.3	Negligible
Connaught Road	0.0	No change
Connaught Road (C)	0.0	No change
Royal Albert Way East	0.0	No change
Royal Albert Way East (D1)	0.0	No change
Royal Albert Way East (D2)	0.0	No change
Royal Albert Way West	0.0	No change
Royal Albert Way West (E)	0.0	No change
Woolwich Manor Way	0.1	Negligible
Woolwich Manor Way (F1)	0.2	Negligible
Woolwich Manor Way (F2)	0.9	Negligible

Receptor	Difference in dB	Long Term Impact
29 Woodman St (G)	0.3	Negligible

- 5.101 Properties on Woodman Street, which is the closest residential area to the new access road, will be exposed to a new traffic. Properties west of Woodman Street will benefit from the purpose built noise barrier created for the Docklands Light Railway (DLR). Properties at the eastern end of Woodman Street in contrast will have a direct line of sight to the new access road.
- 5.102 These properties on Woodman Street are within the Airport's Sound Insulation Scheme, and should therefore have the benefit of treatment under this scheme. As the eastern access road is not currently used, once it is opened under the CADP, it will give rise to a substantial increase in road traffic noise for these few properties at the eastern end of Woodman Street. The absolute levels of road traffic noise however are low, typically around 55 dB  $L_{Aeq,16h}$  thus **minor** in absolute impact terms, around the LOAEL.
- 5.103 The total night time traffic noise level will be less than 55 dB  $L_{Aeq,8hr}$ , the indicative SOAEL value adopted in this assessment and will lie above the LOAEL. The properties exposed to these noise levels will already have been eligible for sound improvement works under the Airport's Sound Insulation Scheme.
- 5.104 Following consideration of existing mitigation, potential health impacts associated with transport noise are constrained to daytime periods are largely negligible, with absolute changes in transport noise limited to potential changes in annoyance. These effects are not of a level to quantify any measurable adverse health outcome.

## Socio-economic

- 5.105 Employment and income are potentially the most significant determinants of long-term health, influencing a range of factors including the quality of housing, education, diet, lifestyle, coping skills, access to services and social networks. Consequently, poor economic circumstances can influence health throughout life, where communities subject to socio-economic deprivation are more likely to suffer from morbidity, injury, mental anxiety, depression and tend to suffer from higher rates of premature death than those less deprived<sup>55, 56, 57</sup>.
- 5.106 Research<sup>(57)</sup> indicates that socio-economic circumstance and relative deprivation are key markers of poor health, associated with increased all-cause mortality in the US and five European countries. This association was seen independently of individual country-specific socio-economic characteristics, with no evidence from any of the countries in the study that substantially modified the association.

55 Beland F, Birch S and Stoddart G. (2002). Unemployment and Health: Contextual Level Influences on the Production of Health in Populations. *Social Science & Medicine* 2002 55(11):2033-52.

56 Stafford M, Martikainen P, Lahelma E and Marmot M. (2004). Neighbourhoods and Self-rated Health: a Comparison of Public Sector Employees in London and Helsinki. *Journal Epidemiol Community Health* 2004 58(9):772-8.

57 Van Lenthe FJ, et al. (2005). Neighbourhood Unemployment and All Cause Mortality: a Comparison of Six Countries. *Journal Epidemiol Community Health* 2005 59(3):231-7. Available at <http://jech.bmj.com/content/59/3/231.full.pdf+html> last accessed 15/07/13.

- 5.107 For men, living in the quartile of neighbourhoods with the highest unemployment compared to the lowest unemployment is associated with an increased risk of mortality (14%–46%), after adjustment for age, education and occupation. A similar but statistically weaker association between unemployment and mortality was found for women.
- 5.108 Projects that have the potential to support regeneration, reduce unemployment and improve socio-economic circumstance, will contribute to improving the health and wellbeing of socio-economically deprived communities.
- 5.109 It is important to note, however, that increasing employment and income opportunities alone will not maximise health benefits. Increased support, training and community involvement is required in order to link and develop skills to employment and reduce the risk of inequality.

### **Construction**

- 5.110 As detailed in the Chapter 7 of the [UES](#) (Socio-economics, Recreation and Community), it is estimated that [355](#) Full Time Equivalent (FTE) direct onsite construction jobs will be supported over the life of the project, with a further [106](#) indirect and induced FTE jobs, making a total of [461](#) FTE jobs.
- 5.111 This equates to around £234m of direct gross value added (GVA) and £70m of indirect and induced GVA, making a total of £304m during the construction of the proposed CADP.

### **Operation**

- 5.112 As detailed in the Chapter 7 of the [UES](#), the economic analysis suggests that if planning consent for the proposed CADP is granted, the Airport would support approximately [510](#) FTE additional [direct, indirect and induced](#) jobs over what can be achieved by [2020](#) within the Airport's current infrastructure, increasing to [1,100](#) FTE direct jobs by 2023 [and 1,030 by 2025](#). Associated indirect and induced FTE jobs equate to an additional 170 by 2021 up to 210 by 2023.
- 5.113 The proposed CADP therefore represents a potential additional [£24](#) million in GVA by 2020 compared to the Without development scenario, increasing to [£47.1](#) million by 2023 [and £48m by 2025](#).
- 5.114 Although it is not possible to model the distribution of future employment uptake, it is fair to assume that the employment catchment area for the Airport will not significantly deviate from the current situation. The distribution of on-site Airport employment is largely derived locally, with 36% of the workforce from the Boroughs of Newham, Greenwich, and Tower Hamlets.
- 5.115 On the above basis, the proposed CADP presents a significant increase in the number of direct, indirect and induced income and employment opportunities with a high proportion of the new jobs likely to be taken up locally. This will have significant socio-economic health benefits at a regional and local level.
- 5.116 The Health Action Plan (HAP) explores additional initiatives to help address existing barriers to such benefits being taken up as part of the Airport's on-going community engagement programme.

## The Hotel

5.117 In addition to the CADP1, the Hotel outline application (CADP2) constitutes a 3 star hotel with the potential for 260 rooms, generating up to 130 additional direct jobs and £6 million of GVA once opened. This would constitute an additional/cumulative socio-economic health benefit.

### Total Employment Outcome

5.118 Overall, taking all types of employment into account, the CADP proposals would generate an increase in local employment of approximately 1,600 compared to 2014, when the full impact of the hotel is taken into account. This is made up of 1,440 jobs as a result of the increase in operational activity at the Airport and around 200 jobs in total related to the hotel and other elements of CADP2. It should be noted that temporary construction employment is additional to this ongoing employment.

## Transport

5.119 Potential health pathways associated with changes in road traffic movements include increased risk of road traffic accidents and injuries, community severance and exposure to vehicle exhaust and noise emissions. The latter two points of air pollution and noise are addressed in the previous sections of this HIA.

### Risk of Road Accident and Injury

5.120 The major and most obvious hazard associated with road traffic is the potential increased risk of human injury as a result of collisions.

5.121 As detailed in Chapter 11 of the UES (Surface Transport and Access), an analysis of the local road network indicates that over a five year period (Feb 2010- Feb 2015), a total of 37 accidents occurred within the study area, of which five were classified as 'serious' and there were no fatalities during this period.

5.122 Despite the Airport's presence, the number and severity of accidents is not considered atypical for this part of London, and is partly due to the Airport being served by a range of public, private and green transport options with a modal preference for the Docklands Light Railway (DLR).

5.123 As detailed in Chapter 11 of the UES, the predicted change in passenger throughput from the proposed CADP, together with the new Hotel users and staff, is anticipated to follow a similar modal split, with a preference for and sufficient capacity on the DLR to accommodate these increases.

5.124 Regarding DLR capacity in particular, the Airport is to contribute towards the costs of two new DLR carriages. This would come forward upon implementation of any CADP planning permission.

5.125 The proposed CADP will result in a reassignment of traffic on the local highway network, resulting in a redistribution and reduction in traffic on certain links by 2025, most notably on

- Hartmann Road: -19.8%;
- Connaught Road (East): -17%;

- Royal Albert Way (East): -12%;
- Connaught Bridge (North): -10.7%;
- Royal Albert Way (West): -10.9%.

5.126 By 2025, the proposed CADP will, however, result in an increase in traffic on others road networks, including Hartman Road (east), which will form a new airport access point and Woolwich Manor Way south (+43.2%).

5.127 All junctions indicate sufficient capacity to accommodate the proposed CADP, while the implementation of a second vehicle access to the Airport provides additional capacity on the highway network and enables the potential traffic impact of the proposed CADP to be spread and more effectively managed between two access points.

5.128 In addition, the proposed CADP will seek to increase the modal split of walking, cycling and use of the east London river crossings for staff and passengers alike, through the provision of a new pedestrian access created along the dockside from the east, connecting to Woolwich Manor Way. Such provision not only improves permeability of the Airport for pedestrians and reduces the walk distance from areas to the east, but also improves safety, by further segregating pedestrian and cycle paths from roads. Additional cycle parking spaces will also be provided.

5.129 Construction traffic is not anticipated to present a significant risk and this will be carefully managed through the adoption of a Construction Logistics Plan (CLP) which will include details of the transportation strategy for construction materials to/from the Airport, including the use of the river where possible, in order to minimise the impacts on the local road network.

5.130 On the above basis, the proposed CADP is not predicted to impact upon local road capacity, or materially impact upon road safety

### **Community Severance**

5.131 The proposed CADP will not adversely impact upon community severance. Instead, it will improve permeability through the provision of an additional Airport access, through the provision of new pedestrian and cycle ways, and through initiatives to improve patronage on local buses and the DLR. Such measures will be detailed in the update to the Airport Travel Plan.

## 6 Conclusion

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### Summary

- 6.1 The construction and operation of the proposed CADP has a number of features that might be considered to have implications for the health of neighbouring communities. This UHIA has examined the extent of these in a manner that considers local circumstance and the appropriate scientific evidence.
- 6.2 The following section provides a summary as to the significance and potential distribution of health impacts during the construction and operational phases of the proposed CADP.

### Construction Effects

- 6.3 Taking into account the likely level of emissions generated on-site during construction, their intermittent nature/duration and minimal opportunity for community exposure, the risk to community health is not of a level to quantify any meaningful adverse health outcome. Such effects would be further managed (avoided or reduced) through bespoke mitigation detailed in the UES, alongside on-going engagement and community support initiatives implemented by the Airport. A summary of these measures are provided in the HAP below.
- 6.4 Prior to mitigation, a key risk at the construction phase would be increased traffic movements and the associated risk of collision. However, such risks (of low likelihood) will be primarily managed by the implementation of a Construction Logistics Plan (CLP) which will include details of the transportation strategy for construction materials to/from the Airport, including the use of the river where possible, in order to minimise the impacts on the local road network.
- 6.5 Construction emissions to air are predicted to be minimal, will remain within air quality standards set at concentrations below which effects are unlikely and are not of an order to quantify any meaningful adverse health outcome. As with all major construction projects, dust impacts can be anticipated. However, following the implementation of the comprehensive Dust Management Plan, potential impacts would be limited to minor temporary annoyance and do not present a risk to local community health.
- 6.6 Following mitigation, predicted construction noise would not be of an order of magnitude sufficient to quantify any significant adverse health outcome, with impacts limited to potential annoyance. On-going engagement with local communities will therefore be key to both managing any residual impacts, and enabling local residents to better manage any intermittent disruption. In addition, Principal Contractor will develop and implement a site specific Construction Noise and Vibration Management and Mitigation Strategy (CNVMMS) covering demolition and new construction. This will ensure that best practicable means are used to mitigate construction noise impacts.
- 6.7 Construction of the proposed CADP would generate significant direct, indirect and induced income and employment at the local and regional level, with subsequent socio-economic health benefits.

## Operational Effects

- 6.8 Once operational, potential changes in air quality are predicted to be negligible, will remain within air quality standards set at concentrations below which effects are unlikely and the relative change in concentration exposure are not of an order to quantify any meaningful adverse health outcome.
- 6.9 Prior to mitigation, air noise from the increase in movements (up to 111,000 flights per annum by 2023) and changes in the fleet mix presents a potentially significant impact on community annoyance, largely for existing populations within the 57 dB (associated with the onset of significant community annoyance) and 60dB contours and new populations from permitted residential developments within this contour. However, comparing the 'with' and 'without' development cases in 2025, there is only a slight increase in noise level resulting from the proposed CADP, less than 1.0 dB, giving rise to a negligible impact when comparing the two scenarios directly and considering the change in impact. A negligible change of this magnitude has no significance in terms of health outcomes.
- 6.10 The proposed CADP will not seek to alter the current operational flying hours as permitted in the 2009 Planning Agreement (with no night time flying). On this basis, the proposed CADP will not impact upon sleep disturbance, which the noise health evidence base indicates to be the key risk factor associated with cardiovascular disease.
- 6.11 The threshold of sound insulation at the Airport is currently the lowest for any UK airport (57 dB) and significantly lower than the Government's recommended threshold of 63 dB  $L_{Aeq,16h}$  that largely preclude the onset of significant annoyance. Under the CADP, in recognition of the fact that air noise emissions will increase slightly as compared to Without CADP, the Sound Insulation Scheme will be upgraded to offer additional benefits to those affected by noise from the Airport. The Airport proposes under CADP to improve the First Tier of works, introduce an Intermediate Tier of treatment, and also to upgrade the Second Tier to further protect those most affected by noise. The additional tier of works will be eligible to all existing dwellings exposed currently to 63 dB or more as well as any existing dwellings that come into the eligibility noise contour in the future.
- 6.12 Potential impacts on schools are predicted to be minimal, with no hospitals located within the 57 dB  $L_{Aeq,16h}$  noise contours (either now or proposed). The Richard House hospice currently lies within the boundary of the existing Sound Insulation Scheme, and is therefore already well insulated against external noise. Potential changes in noise exposure at academic institutes are marginal, and not of a level to quantify any impact upon academic performance.
- 6.13 Changes in Airport infrastructure and operations will alter the characteristics of daytime ground noise and consequent exposure to surrounding communities. A reduction in ground noise is predicted at some receptors. An increase is predicted at others. The overall impact will be comparable to the baseline scenario. For the With CADP scenario, 382 or 16% of the receptors are exposed to levels of ground noise in excess of 55 dB  $L_{Aeq,16h}$ , a significant level of ground noise. A similar number, 299 or 13% of the receptors will be exposed to significant levels of noise for the 2025 Without CADP scenario. Around an additional 40 receptors will be exposed to a significant moderate absolute level of ground noise with around 42 (1.8%) additional receptors experiencing a

significant substantial absolute level, above the SOAEL, as compared to the Without CADP scenario. Such noise effects are not of a level to quantify any measurable adverse health outcome.

- 6.14 Surface transport noise from the proposed CADP will be largely negligible for the majority of receptors modelled. However, properties on Woodman Street closest to the new eastern access road are predicted to be exposed to a major relative increase in noise due to the new traffic source. The absolute levels of road traffic noise however are low, typically around 60 dB  $L_{A10,18h}$  and not significant.
- 6.15 The proposed CADP will result in a reassignment of traffic on the local highway network, resulting in a redistribution and reduction in traffic on certain links and an increase on others. However, all junctions indicate sufficient capacity to accommodate the additional road traffic associated with the proposed CADP, while the implementation of a second vehicle access to the Airport provides additional capacity on the highway network and enables the potential traffic impact of the proposed CADP to be spread and more effectively managed between two access points. The proposed CADP is not predicted to impact upon local road capacity, materially impact upon road safety or adversely impact upon community severance.
- 6.16 The proposed CADP presents a significant increase in the number of direct, indirect and induced income and employment opportunities with a high proportion of employment opportunities likely to be taken up locally, with significant socio-economic health benefits at a regional and local level.
- 6.17 Overall, taking all types of employment into account, [in the With CADP Core Case](#) the proposals would generate an increase in local employment of approximately 1,600 compared to 2014, when the full impact of the Hotel is taken into account. This is made up of 1,440 jobs as a result of the increase in operational activity at the Airport and around 200 jobs in total related to the Hotel and other elements of CADP2. [When further considering the additional construction employment](#), this constitutes a significant socio-economic health benefit.

## Conclusions

- 6.18 On the basis that all regulatory environmental standards set to protect health are predicted to be achieved; that the assessment from relative changes in air quality, noise and transport upon existing burdens of health are not sufficient to quantify any significant adverse health outcome; and, when considering commitment for on-going community engagement, the proposed CAPD does not constitute a significant risk to local community health.
- 6.19 Furthermore, when accounting for the underlying factors defining local burdens of poor health in and surrounding the area (largely socio-economic and lifestyle related), and the direct, indirect and induced socio-economic benefits from the proposed CADP, alongside an impressive catalogue of committed community support initiatives introduced by the Airport (summarised within the HAP) to optimise local health benefit uptake, the proposed CADP constitutes a net health benefit.
- 6.20 [This conclusion does not materially change from the original HIA or the Addendum to the HIA.](#)

## 7 Health Action Plan

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### Introduction

- 7.1 The Health Action Plan (HAP) builds on the information provided through the assessment sections of this report and provides a series of recommendations to address local circumstance, concerns and needs. The HAP is not solely intended for the Airport, but rather should also be used by the London Borough of Newham and Health Stakeholders to coordinate and complement community support initiatives with the Airport.

### Environmental Impact Assessment Mitigation

- 7.2 The UES assesses a range of potential environmental impact pathways, with input from air quality, noise, transport and socio-economic disciplines. Given the multidisciplinary nature of HIA, there is significant overlap with several of the technical disciplines that have informed the UES, and with the mitigation measures that they propose. Therefore, for the sake of brevity, the HAP does not seek to repeat this mitigation in full but signposts and summarise this as a useful basis to complementary HAP mitigation.

### Air Quality

- 7.3 A series of mitigation measures drawing from best practice guidance is incorporated into the CADP Construction Environmental Management Plan (CEMP) and Construction Logistics Plan (CLP), as described in Chapters 6 and 11 of the UES. The CEMP will be supported through a committed engagement strategy building from the Airport's on-going engagement with stakeholders and local communities before and during work on site. Engagement will be applied to both inform local communities as to planned and potentially disruptive works, but also to record community concerns and complaints. This will help inform, refine and enhance the construction process and the proposed mitigation, where appropriate.

### Noise

#### Construction Noise Management

- 7.4 The Airport proposes to build upon both best practice guidance and the successful mitigation applied during the construction of the existing Eastern Apron (part of the Operational Improvement Programme in 2007-2008) which managed noise impacts (including night time periods) effectively, with minimal community complaints. Proposed measures include:
1. Community Relations – keeping local people informed of progress and treating complaints fairly and expeditiously;
  2. Site Personnel Training – informing site personnel about the need to minimise noise and advising on the proper use and maintenance of tools and equipment and the positioning of machinery to reduce noise emission to the neighbourhood;

3. Site Location – setting noise emission limits with due regard to the proximity of noise sensitive premises;
4. Duration of Site Operations – local residents may be willing to accept higher levels of noise if they know that such levels will only last for a short time: noisy site operations should be carried out according to a stated schedule; and,
5. Type of Plant – consideration should be given to using quiet techniques taking account of practical site constraints and best practicable means (BPM), [as described in Chapters 6 and 8 of the UES](#).

### **Ground Noise Management**

The Airport already operates a comprehensive ground noise management programme and has sought to enhance such management through the design of the proposed CADP, including:

1. The substantial height of the Eastern Passenger Pier/ Eastern Terminal Extension will act as a noise barrier reducing ground noise levels experienced by the nearest dwellings to the south of the Airport;
  2. Encouraging the minimum use of reverse thrust on landing, consistent with safety constraints;
  3. Except in emergencies, engine testing will be (as now) restricted to areas designated for that purpose;
  4. Maintaining a noise limit for policing the level of high powered ground runs for engine testing and maintenance purposes;
  5. Limiting engine test and maintenance activities to those associated with engine rectification, rather than routine testing;
  6. Limiting the use of Auxiliary Power Units (APUs) on aircraft to no more than 10 minutes prior to departure and 10 minutes after landing; and,
  7. Providing fixed electrical ground power (FEGP) to apron stands to minimise the use of mobile units or APUs.
- 7.5 The Airport operates a system to discourage excessively noisy departures using a system of penalties and incentives agreed between the Airport and LBN. Full details of these mitigation measures are presented in the [Noise Action Plan \(2013-2018\)](#)<sup>58</sup>.

### **Air Noise Management, Mitigation and Monitoring**

- 7.6 As detailed below, the Airport operates a comprehensive and leading UK airport air noise management programme. [The Airport will continue to operate existing mitigation schemes, and maintain periods of respite and, where appropriate, seek to improve the various noise mitigation measures in place at the Airport that have successfully ensured that noise effects to the local community have been, and will continue to be, controlled to acceptable levels.](#)

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<sup>58</sup> London City Airport Noise Action Plan 2013-2018. Available at [http://www.londoncityairport.com/content/pdf/Noise\\_Action\\_Plan\\_2013\\_2018.pdf](http://www.londoncityairport.com/content/pdf/Noise_Action_Plan_2013_2018.pdf) Last accessed 28/08/2015

## **Noise Monitoring and Mitigation Strategy**

- 7.7 The Airport's Noise Monitoring and Mitigation Strategy (NOMMS) sets out a framework to provide a more robust system of noise control, reporting and mitigation. This includes the measurement and monitoring of ground based sources as well as airborne noise.
- 7.8 Furthermore, the NOMMS includes the recording of aircraft tracks and associated information of aircraft using the airport with the introduction of a Noise and Track Keeping System with greater functionality. This will allow this data to be directly accessible to the public via a web portal. This strategy also retains and expands upon a series of noise management functions dealing with, for example:-
- An incentives scheme to ensure airlines fly as quietly as possible;
  - Control of engine running and auxiliary power units by aircraft on stands;
  - Operation of quiet operating procedures;
  - Operation of temporary noise monitoring strategy (in case of failure of any existing continuous noise monitoring terminal);
  - Production of annual noise contours; and
  - Operation of a two three sound insulation scheme.

## **Sound Insulation Scheme (SIS)**

- 7.9 Under CADP, the Airport will continue to operate the Sound Insulation Scheme using the most stringent UK airport daytime trigger limit of 57 dB  $L_{Aeq,16h}$  as a First Tier eligibility criterion supplemented to provide thermal double glazing to those existing single glazed properties in addition to acoustic ventilation. Moreover, the Airport will improve the Second Tier scheme by offering those people most affected by noise, that is, those within the 66 dB  $L_{Aeq,16h}$  contour, improved secondary glazing or a 100% monetary contribution towards high acoustic performance thermal double glazing, together with acoustic ventilation. This will ensure that all of those most affected by noise are afforded the maximum noise protection opportunity.
- 7.10 In addition to the above, the Airport proposes under CADP to introduce an Intermediate Tier of treatment, at a level of 63 dB  $L_{Aeq,16h}$ , where an offer of secondary glazing and acoustic ventilation will be made or alternatively, a contribution of £3,000 towards high performance acoustic double glazing and acoustic ventilation.

## **Purchase Offer**

- 7.11 Any eligible properties that fall within the 69 dB  $L_{Aeq,16h}$  noise contour will receive an offer from the Airport to purchase the property at the open market value within 6 months of the owner/occupier making an application for the Airport to do so. To date, no properties fall within this noise contour.

## **Noise Insulation Payment Scheme**

- 7.12 The Airport has prepared and submitted to LBN for approval a scheme where any new residential developments within the 57 dB or 66 dB  $L_{Aeq,16h}$  noise contours which received Planning Permission but had not been built as of 9th July 2009 will benefit from a noise insulation payment scheme that

funds during construction any additional works anticipated as a result of the Airport's 2009 planning approval, over and above any pre-agreed planning conditions with regard to external sound insulation.

- 7.13 On the above basis, the Airport already applies a comprehensive noise management, monitoring and mitigation programme that surpasses Government recommendations and includes on-going community and stakeholder engagement.

### **Transport and Access**

- 7.14 As encouraged by health stakeholders during the HIA scoping exercise, the proposed CADP includes the provision of new and enhanced cycle and pedestrian ways to increase the modal split of walking, cycling and use of the east London river crossings for staff and passengers alike. Additional secure cycle parking and appropriate staff facilities are also included to further enhance the uptake of active transport. Such provision not only improves permeability of the Airport and for existing communities for pedestrians by reducing the walk distance from areas to the east, but also improves safety, by further segregating pedestrian and cycle paths from roads.
- 7.15 The use of these and other sustainable transport modes, including buses and the DLR, will be further promoted through the Airport Travel Plan.

### **Community Engagement**

- 7.16 The Airport has regular communication and contact with local people through a wide variety of channels, including:
1. The London City Airport Consultative Committee (LCACC) provides a forum to monitor and discuss all aspects of the operation and development of the Airport, and especially its impact on, and opportunities for, people living and working in the surrounding area. The LCACC is made up of a balance of representatives from local authorities, public bodies, local residents and Airport users. Meetings are held quarterly and the committee's agendas and minutes are published on the committee website;
  2. The 'Runway News' community newsletter provides information on Airport Operations, Development and Community Programmes. It is distributed to 33,000 local homes quarterly and is available online; and
  3. London City Airport's Air Transport Forum (ATF), was created in 1999 in response to Government guidelines set out in the 1998 White Paper - 'A New Deal for Transport – Better for Everyone'. It is designed to improve and sustain access to the Airport. The Airport Surface Access Strategy, developed and implemented in conjunction with the ATF, details short and long term plans to increase the use of public transport by staff and passengers.
- 7.17 On the above basis, the Airport already operates a comprehensive engagement programme with local communities and stakeholders alike, and has already been applied to engage and discuss the proposed CADP. Subject to consent, the Airport will utilise such communication channels/forums to continue to raise awareness as to the programme for the proposed CADP, the timing and duration

of construction activities, emerging employment opportunities, and complaint contact details and procedures to address community concerns. On-going engagement will thereby aid local communities in managing any residual disruption, while providing a means to further refine construction activities and mitigation, and support the uptake of potential socio-economic opportunities brought forward by the proposed CADP.

## **Education, Training and Career Development**

- 7.18 The proposed CADP has the potential to help directly address some of the economic issues in the area through the creation of jobs and opportunities for local business. It is also in the interest of the Airport to maximise local recruitment and build its supply chain locally. It is recognised, however, that there are barriers to local employment (most notably educational attainment) that need to be addressed to optimise the uptake of benefits locally, and to assist in addressing an underlying causes for health deprivation and inequality.
- 7.19 With these issues in mind, the Airport will continue to support education attainment and employment through the London City Airport's Education Excellence Programme. The programme helps young people and adults develop the skills and attributes required for future employment, either at the Airport or elsewhere. The projects delivered within the programme focus on basic skills, raising aspirations and attitude for employment, and are divided into the following categories:
1. Primary (4-11 years) and Secondary (11-16 years), intended to increase children's aspirations from an early age, and raise awareness as to potential career options; including:
    - o local primary school classes are invited to come to the airport to take part in an educational tour. Staff and students will have the opportunity witness terminal operations and see the range of different services available landside.
    - o a teaching resource available for KS2 teachers to use towards building a history module for their class. The pack focuses on the history of the Royal Docks, including the crucial role it played in connecting London to the world in the 19th & early 20th Centuries, life and work in the Victorian Royal Docks and during WW2, and the deindustrialisation of the area. It also gets the students thinking about change and regeneration going on now and into the future
    - o educational geography programme for year two students at local selected schools (13 from the London Borough of Newham, 1 from the London Borough of Tower Hamlets and 1 from the London Borough of Greenwich);
    - o attending careers and aspiration days;
    - o working with the Hackney Education and Business Partnership to deliver Hackney Inspire Sessions, telling primary school children about future careers that they could aim for; and
    - o the "Plane Business" education programme has been developed by the Airport in partnership with Newham Education Business Partnership (EBP) as a case study to give local students an insight into airport business, markets and passengers. The aim of

this resource is to introduce year nine students to the concepts of business and trade, using London City Airport as a vehicle. It could also be used as a starter activity for GCSE Business Studies students.

2. Further Education (16-18 years), intended to further raise awareness as to local employment opportunities, career paths and the development of skills and experience to realise them, including:
    - o Airport insight travel and tourism. As part of the Education Excellence programme, the Airport, in conjunction with the Travel and Tourism Diploma Organisation, has produced eight short films covering various topics across the business to offer an insight into its operation, strategy and ethos.
    - o Work Experience. The Airport runs a weekly work experience placement aimed mainly at college students who are studying a travel and tourism related course within the local area. This involves spending a day in various departments of the airport, such as customer service and airfield operations, to gain a feel for the careers available to them once they have left college.
  3. Higher and Adult Education. The annual London City Airport University Scheme provides financial assistance, management mentoring and paid work placements to local students selected to join the scheme. Since the programme started in 2004, the Airport has awarded 16 students from Newham, Tower Hamlets and Greenwich grants of more than £150,000 in total. In addition to a £2,000 annual grant and a personal Airport Management Mentor, students also benefit from paid work experience in departments around the Airport to gain a better understanding of the business and its operations.
- 7.20 In addition, the Airport continues to support academic institutions in general.
- 7.21 On the above basis, the Airport is already well networked with local academic institutions and operates an impressive education support programme ranging from primary to higher education, linked to the Airport employment support initiatives.
- 7.22 The Airport [has continued](#) to work with local schools, colleges, the universities and training providers to raise awareness of opportunities amongst school children and students and support academic excellence through careers talks, work placements, awards and sponsorship.

## **Employment Support**

- 7.23 The Airport already supports local education and employment through a series of interlinked initiatives. The 'Take off into work' employment programme with East London Business Alliance comprises a two week employability training course and then a two week work placement at the Airport within departments such as customer service, retail and car hire. The programme takes place five times per year, with up to 15 candidates and is open for applications from all Newham residents over 16 who are not in employment or education.
- 7.24 Since 2009, the programme has resulted in assisting [400](#) people from Newham into employment, is one of the most successful employment programmes in the Borough, and [the Airport was awarded](#)

with the prestigious Lord Mayor's Dragon Award in recognition of its significant contribution and commitment to the economic regeneration of London.

- 7.25 It is recommended to expand the scope of the programme to support the construction of the proposed CADP, offering training and experience in construction and environmental management.
- 7.26 The Airport will also continue to advertise training, education and employment opportunities through its newsletter and to work with local employment agencies and training institutes to maximise the uptake of employments locally.

## **Community Participation and Support**

- 7.27 The Airport already provides a range of local community support initiatives, including education and mentoring programmes, charity and fundraising events and health and wellbeing programmes.

## **Health and Wellbeing**

- 7.28 The existing Airport Health and Wellbeing programme is intended to support staff and neighbouring communities to engage in healthy activities, including:
1. Supporting local programmes that encourage healthy living, team work, commitment, competitiveness and other attributes conducive to sustainable employment;
  2. Encouraging active and healthy lifestyle opportunities for local people through support for health, wellbeing and/or sporting organisations working with the community around London City Airport, or its staff;
  3. A Community Food Enterprise (CFE) is a social enterprise food business which is rooted in the London Borough of Newham and was founded in 2002 by members of the local community. CFE is a sustainable community food enterprise that provides training and employment opportunities for members of the community while supplying fresh fruit and vegetables to local people at a realistic price to encourage them to eat the right food. The Airport engages the CFE as a local supplier to deliver fresh fruit to all Airport staff every week, encouraging its staff base to eat healthily, while providing custom to a local supplier;
  4. South London Special League, based in Greenwich, holds sporting events for disabled young people from London to improve their fitness, raise their self-esteem and heighten their aspirations. The Airport sponsored its annual summer football tournament and also provided staff volunteers to help out on the day.
- 7.29 It is recommended the Airport further engage with the newly formed Health and Wellbeing Board <sup>(59)</sup> to link health awareness programmes (with greater coordinated coverage and effect), and to explore opportunities for complementary community support initiatives, and the encouragement of other private organisations to participate.

## Charity and Community Events

7.30 The Airport both supports and actively encourages staff to participate in local charity and community events, [in 2014 the Airport:](#)

1. Raised £48,000 for Richard House (current total £750k over 17 years)
2. volunteered over 605 hours of staff time to various events in the local area;
  - re-painting the community hall at local Ascension Church;
  - developing a sensory garden;
  - rejuvenating the ASTA Centres outdoor play area and garden;
  - exploring ideas for income generation at the Docklands Equestrian Centre;
  - organising a fund day for elderly members of neighbours on Popular's Ling Age Hub

7.31 On the above basis, the Airport already actively seeks to strengthen its relationship with, and support of, local communities through an impressive array of sponsorship, financial support, coordination and facilitation of charitable events, and further volunteers time to work within local communities.

7.32 The core recommendation is to improve awareness of such initiatives to primarily encourage similar support from other organisations, but to also coordinate complementary support initiatives to even greater effect.

## Health Action Plan Conclusion

7.33 The Airport already provides noise mitigation that surpasses Government recommendations and operates an impressive array of community support initiatives and on-going engagement that target the underlying factors defining local burdens of poor health and inequality.

7.34 Health recommendations to supplement existing mitigation and engagement are minor, largely endorsing and refining initiatives to address gaps and local health circumstance. The core recommendation is for the Airport to continue to raise awareness of such initiatives and encourage similar Corporate Social Responsibility (CSR) best practice from other organisations in London. Additionally, it is recommended the Airport CSR Team engage with the newly formed Health and Wellbeing Board to further explore and coordinate health and wellbeing programmes, but to also discuss future community support initiatives, and ways of maximising their influence through coordinated effort.

## **8 Brief Statement of Conformity with Previous HIA Findings**

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- 8.1 The UHIA has reviewed the UES and updated the corresponding health assessment protocols accordingly to account for: changes in baseline and modelling outputs; population demography and health characteristics; and the available scientific evidence base underpinning the UHIA.
- 8.2 The UHIA assessment and conclusions drawn have not materially changed, partly due to the robust selection of assessment protocols originally selected (including sensitivity analysis for health risks from changes in NO<sub>2</sub>, prior to the emergence of more robust evidence), and due to the conservative approach taken when quantifying potential risk from changes in air quality and noise.

# Appendices

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# Appendix A: HIA Scoping Statement

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Note: This document has NOT been updated.



**Eastern Stand Development (ESD)**

**Health Impact Assessment Scoping Statement**



## Eastern Stand Development (ESD)

### Health Impact Assessment Scoping

#### Statement

<b>Prepared by:</b>	Dr Andrew Buroni	HIA Practice Leader		21 November 2012
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<b>Authorised by:</b>	Dan Smyth	Senior Director		21 November 2012
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## Quality Management

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Revision History				
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0	10/10/12	First Draft	-	-
1	16/10/12	Draft	Implement Team Comments and Technical Director Review	-
2	15/10/12	Draft	Implement Team Comments and Technical Director Review	-
3	20/11/12	Draft	Implement Team Comments	-
4	21/11/12	Final	Implement Team Comments	-

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# 1 Introduction

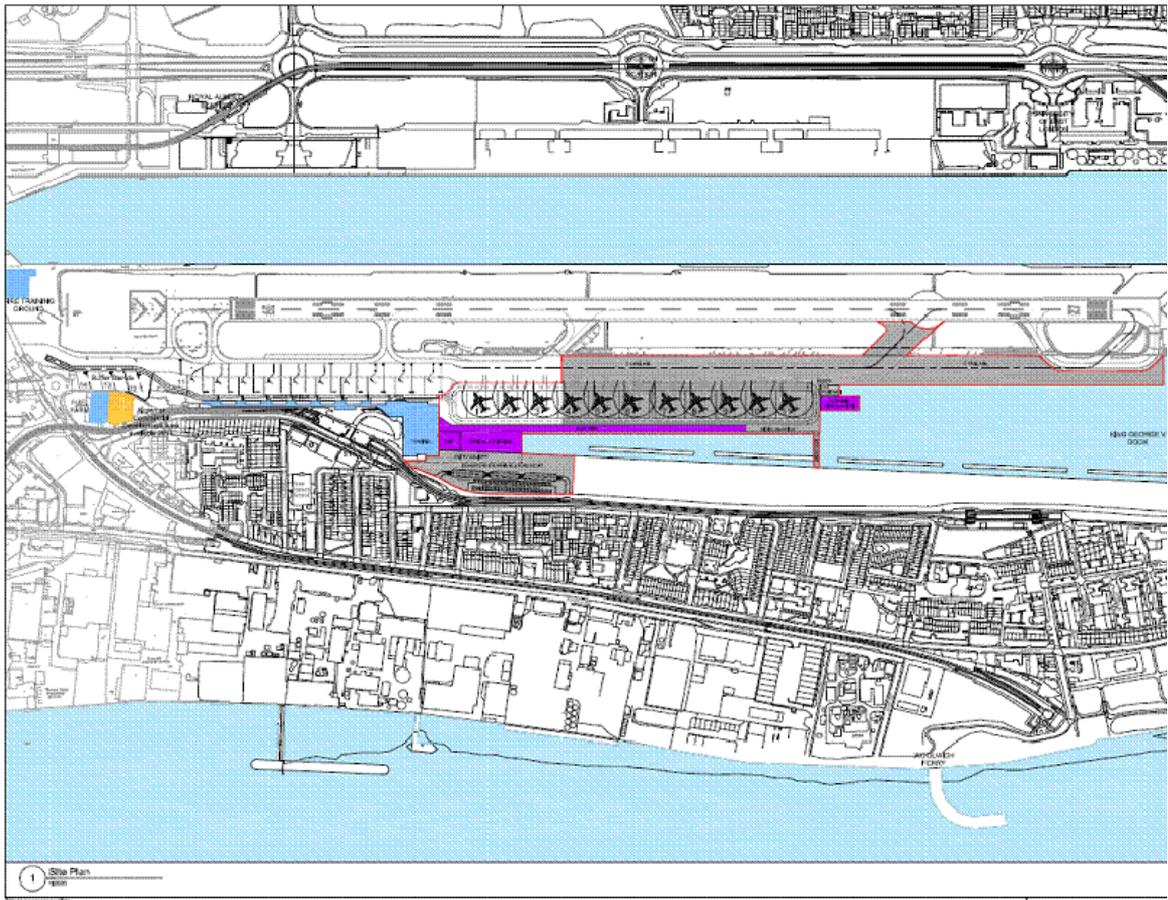
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## Background

- 1.1 London City Airport Limited (LCY) intends to seek full planning permission from the London Borough of Newham (LBN) for new and upgraded aircraft stands, an extension to the taxi-lane running adjacent to the runway, a new arrivals building, reconfigured forecourt area and related infrastructure works. The application proposals will allow the Airport to accommodate a new generation of aircraft as well as improving the facilities for passengers. The project, known as the Eastern Stand Development (ESD), forms part of planned on-going improvements at the Airport that will enhance operational efficiency, passenger service and capacity in accordance with current and future customer, airline and regulatory requirements. Such improvements are broadly consistent with the long term plans which were described in London City Airport's 2006 Master Plan. The planning application for the ESD is anticipated to be submitted to LBN towards the end of the first quarter of 2013.
- 1.2 London City Airport is located between the Royal Albert Dock and King George V Dock (KGV) within the London Borough of Newham, east London. Figure 1.1 below illustrates the current layout of the Airport whilst Figure 1.2 shows the indicative redline boundary for the ESD planning application.
- 1.3 The ability of the Airport to enhance its infrastructure and facilities is constrained by its dockside location and proximity of other constraints including the Docklands Light Railway (DLR). Accordingly, consistent with the 2006 Masterplan, it is proposed to extend eastwards by decking over parts of the KGV Dock.

**Figure 1.1 - Aerial View of London City Airport (looking east)**



**Figure 1.2 – Indicative Planning Application Redline Boundary**

- 1.4 This ESD project will in part help to ensure that the Airport's existing infrastructure is brought up to regulatory requirements and standards in order to accommodate the most modern aircraft currently operating, in development or early production.
- 1.5 No increase in the permitted number of aircraft movements is being sought at this time and the Airport will continue to operate up to a maximum limit of 120,000 (noise factored) movements per annum within the constraints of the factoring system approved by LBN. Furthermore, all existing environmental and operational controls, strategies and systems approved through the conditions attached to the 2009 Planning Permission (ref. 07/01510/VAR) and the associated Planning Agreement of the July 2009 will continue to apply (with any appropriate amendments, where necessary).

### **Health Impact Assessment: Scoping Exercise**

- 1.6 In keeping with best practice, a voluntary Health Impact Assessment (HIA) has been commissioned to further support more health conscious planning, to aid in further investigating and addressing community concerns and to support the further development and refinement of the on-going Airport Community Relations Strategy.
- 1.7 The purpose of this draft HIA scoping statement is to supplement the formal scoping exercise with statutory consultees, providing key health stakeholders the opportunity to comment upon

and support the refinement of the scope and focus of the HIA. Given that HIA is a non-regulatory requirement, with no governing body and varying methods, such initial input is essential to ensure the subsequent HIA is both suitable for submission as a supplementary document supporting the planning application, but also meets local expectations and requirements.

1.8 In this context, the HIA scoping statement has been sent to the Strategic and Local Planning Authorities (Greater London Authority and London borough of Newham) and the following key health stakeholders:

- Dr Rachel Flowers      Newham Joint Director of Public Health
- Dr Ian Basnett      Tower Hamlets Director of Public Health
- Dr Hilary Guite      Greenwich Director of Public Health

1.9 The remainder of this document sets out the aim and objectives of the study, the proposed approach and methodology.

## 2 Health Impact Assessment

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### HIA Aim, Objectives and Necessary Outputs

- 2.1 The primary aim of the HIA is to build on and complement the outputs of the Environmental Statement to demonstrate how community health and well-being are addressed within the ESD, to assess the distribution and significance of potential health pathways (both adverse and beneficial), and where possible, put forward recommendations to maximise health gains whilst minimising potential negative impacts.
- 2.2 This aim will be delivered through the following objectives:
- seeking input on the HIA scope, focus and methods to be applied with the London Borough of Newham and key health stakeholders;
  - community profiling to establish local circumstance and relative sensitivity;
  - quantifying and appraising the magnitude, distribution and likelihood of potential health outcomes (both adverse and beneficial) directly attributable to the ESD;
  - development of a dedicated Health Action Plan (HAP); and
  - the development of a HIA suitable for submission with the planning application.

### Approach

- 2.3 The basis of the HIA will be in accordance with UK guidance, set on a broad socio economic model of health that encompasses conventional health impacts such as communicable disease, accidents and risk along with wider determinants vital to achieving good health and well-being.
- 2.4 A key aspect of RPS's approach will be to build upon the process and technical information provided within the Environmental Statement (ES). Such an approach will ensure the consistency and accuracy of the HIA to the ES and ensure a solid basis to the assessment. The final HIA will be submitted alongside the planning application.

### Methodology

- 2.5 Although guidance and a generic HIA process exists, the methods employed in HIA are often tailored to meet the particular assessment requirements of a project.
- 2.6 As set out below, the HIA will comprise six key stages including: 1) a HIA scoping exercise, 2) a project profile, 3) a community profile; 4) stakeholder engagement; 5); assessment and 6) a Health Action Plan.

### HIA Scoping Exercise

- 2.7 This draft HIA scoping document is intended to supplement the formal Environmental Impact Assessment (EIA) scoping process, by providing key health stakeholders the opportunity to

comment upon the proposed approach, methods and necessary outputs from the onset of the HIA.

### **Project Profile**

- 2.8 The purpose of the project profile is to identify features associated with the proposed development that potentially influence key determinants of health. The profile will be compiled through a review of both project specific and broad information including:
- the project description developed as part of the planning application;
  - the Environmental Statement (ES) and associated technical appendices (in particular, air quality, noise, traffic, socio-economic sections); and
  - consultation with the client and ES project team, including the London City Airport Consultative Committee (LCACC).
- 2.9 By developing the project profile it is possible to list potential causal pathways, to aid in refining the development of an appropriate evidence base, to support the development of a meaningful community profile and to focus the core health issues to be assessed and addressed.
- 2.10 The current health pathways to be assessed are listed in the assessment section below.

### **Community Profile**

- 2.11 Evidence suggests that different communities have varying susceptibilities to health impacts and benefits as a result of social and demographic structure, behaviour and relative economic circumstance.
- 2.12 A community profile therefore not only forms the basis to exposure response modelling but also allows an insight as to how potential health pathways identified by the project profile might act disproportionately upon certain communities and sensitive receptors/groups.
- 2.13 In this case, the community profile will draw from and build upon the socio-economic section of the ES with the use of available small area demographic, socio-economic and health statistics taken from National Statistics supported by health and hospital admissions data available from the PCT and London Health Observatory.

### **Stakeholder Engagement**

- 2.14 Seeking the views of key stakeholders and key representatives of local communities will form an important component of gathering an appropriate evidence base and tailoring the HIA to local circumstance. By highlighting and responding to community concerns the HIA can be applied to address perceived as well as actual risks and develop more effective recommendations to reduce adverse impacts and maximise health benefits.
- 2.15 The HIA will implement a tiered approach, building upon the documented community consultation inputs from the EIA and airport complaint data, with further engagement with key stakeholders responsible for maintaining local community health.

2.16 Tiers of engagement include:

- Review of Airport Consultative Committee outputs: The Airport Community Team holds a catalogue of community consultation outputs and airport complaint data. A review of such information will provide an in-depth insight into local community concerns and opportunities to consider within the HIA;
- EIA/HIA Scoping Exercise: This stage provides high level input from statutory consultees and key stakeholders responsible for protecting the health and well-being of local communities; and
- integrated EIA/HIA Consultation: The HIA team will draw from and complement the on-going EIA consultation process. The HIA team will review consultation feedback to further inform the scope and focus of the HIA, supplemented by iterative consultation with key health stakeholders at the London Borough of Newham and PCT.

2.17 Such a tiered approach provides a means to investigate and address a wide range of community concerns within the HIA, to focus key issues with key community and health stakeholders, and further inform the development of a bespoke Health Action Plan tailored to local requirements and circumstance.

### **Assessment**

2.18 The assessment stage will draw upon appropriate technical topic areas within the ES to ensure the HIA is based upon realistic changes in environmental conditions as a consequence of the proposed ESD.

2.19 The assessment will seek to address each of the core health pathways identified during the project profile and through consultation, and where possible, apply internationally recognised quantitative assessment methods to establish the distribution, significance and likelihood of worst-case potential health outcomes. However, as a minimum the assessment is anticipated to include:

### **Construction:**

- qualitative appraisal as to the potential health impact from changes in local air quality during construction;
- qualitative appraisal as to community disruption and potential health outcome from changes in noise and vibration (drawing from the noise and vibration assessment of the ES);
- quantitative risk assessment from changes in road traffic movements and subsequent risk of collisions directly attributed to the proposed ESD (drawing upon the traffic assessment within the ES); and
- qualitative appraisal as to the socio-economic health benefits from direct, indirect and induced income and employment opportunities (drawing from the socio-economic section of the ES).

**Operation:**

- quantitative exposure response modelling for changes in concentration exposure to ground-borne emissions to air (predominantly focusing on NO<sub>2</sub> exposure although PM<sub>10</sub>, and PM<sub>2.5</sub> will also be assessed to address perceived risks);
- qualitative appraisal as to community disruption and potential health outcome from changes in ground-borne noise from new stands and runway links (drawing from the noise and vibration assessment of the ES);
- quantitative exposure response assessment concerning risk of annoyance and sleep disturbance, among other factors, from changes in air-borne noise directly attributed to the proposed ESD;
- qualitative appraisal as to community disruption and potential health outcome from changes in road traffic noise directly attributed to the proposed ESD; and
- qualitative appraisal as to the socio-economic health benefits of direct, indirect and induced income and employment opportunities that arise from improving the long term viability of London City Airport by facilitating the modernisation of the aircraft fleet mix.

2.20 Public Safety Zones (PSZ) will not be assessed through the HIA.

**Health Action Plan**

2.21 A Health Action Plan (HAP) expands upon the normal recommendations section within HIA guidance, establishing recommended protocols and monitoring regimes to be implemented during construction and operation to further reduce and remove potential negative health impacts while maximising opportunities to increase health benefits. In this instance, the HIA team will work with the London City Airport Community Liaison team to develop and refine local community support initiatives to further support London health, wellbeing and equality objectives.

2.22 Please feel free to contact Dr Andrew Buroni if you have any queries on the HIA scope and focus, and please send any comments, suggestions or confirmation of the HIA scope to Dr Andrew Buroni.

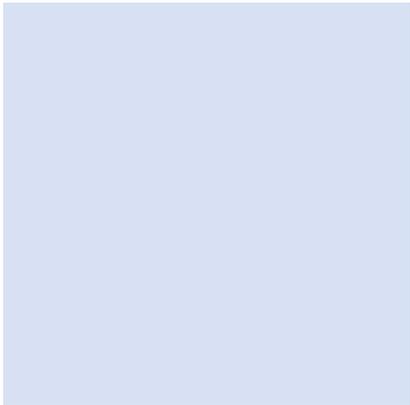
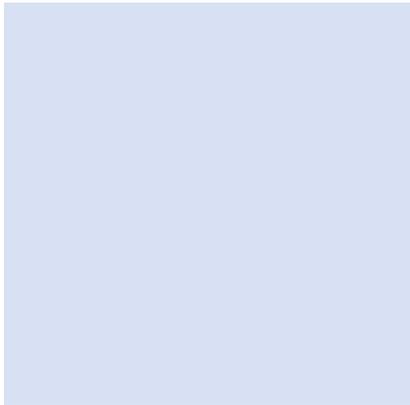
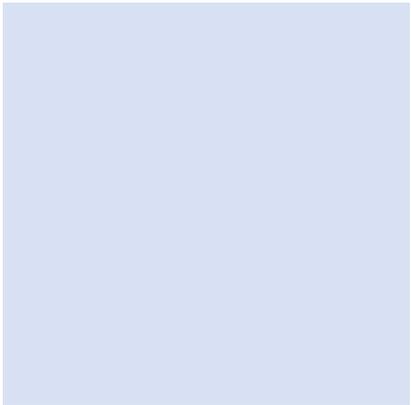
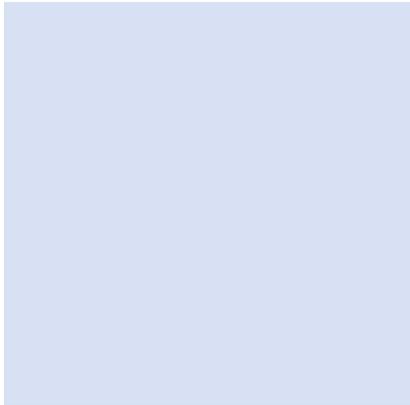
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## **Appendix B: Quod Equalities Impact Assessment**

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LONDON CITY AIRPORT

**UPDATED** EQUALITIES IMPACT  
ASSESSMENT

September 2015

## Contents

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# 1 INTRODUCTION

- 1.1 This [Updated](#) Equalities Impact Assessment (EqIA) has been prepared and submitted by Quod, on behalf of London City Airport (the “Airport”), to support the planning applications (13/01228/FUL and 12/01373/OUT) for the proposed City Airport Development Programme (“CADP”). [The report has been updated \(as shown in blue text\) to take into account the latest information contained in the CADP Updated Environmental Statement \(UES\) and Minor Changes Folder.](#)
- 1.2 This statement sets out information to assist the London Borough of Newham (LBN) [and the Secretary of State and Planning Inspector appointed by the Secretary of State](#) in considering their public sector equality duty as set out in the Equality Act 2010. Section 149 of the Act requires public authorities to have due regard to a number of equality considerations when exercising their functions. The aim of this assessment is to assist the decision-maker in this duty by presenting the relevant information relating to the project.
- 1.3 The planning applications for the proposed CADP are accompanied by a number of documents including an [Updated Environmental Statement \(UES\)](#) and an [Updated](#) Health Impact Assessment. The potential impacts of the project on local communities, human health and the local economy and business have been considered in full within these assessments.
- 1.4 The submitted CADP Design and Access Statement, [its Addendum](#) and [Update \(September 2015\)](#) sets out the design features which have been considered as part of the applications to ensure the built environment and public realm created by the project adheres to currently legislation and design codes. Therefore these documents should be read alongside this [Updated](#) EqIA.

## 2 SITE & LOCAL CONTEXT

### a) The Airport in Context

- 2.1 The Airport is located in East London within the administrative area of LBN within Royal Docks ward. The Airport is approximately 6 miles east of the City of London, approximately 2 miles east of Canary Wharf and 0.5 miles away from the ExCeL Exhibition and Conference Centre. The surrounding area comprises of a mix of residential, industrial and commercial uses. There is also a significant amount of planned development and regeneration in the vicinity of the Airport.
- 2.2 Opened in 1987 the Airport is a strategic transport hub close to Central London. The Airport has a particularly important role servicing business travel of those travelling to and from London, along with other more general air travel and leisure tourism.
- 2.3 The Docklands Light Railway provides the Airport with excellent an excellent public transport link to London's two main financial districts, Canary Wharf and the City of London. As a global financial centre, London makes a significant contribution towards the UK economy as a whole. The Airport plays a significant role in supporting London as an attractive location to do business.
- 2.4 [According to the UES there were 1,948 people employed at the Airport in 2014.](#) A significant proportion of the Airport's employees live locally, 29% within LBN and a total of 64% living within the "local area"<sup>1</sup> as defined by the Airport's Section 106 Agreement relating to the 2009 Planning Permission (ref. 07/01510/VAR) to allow up to 120,000 annual aircraft movements.
- 2.5 Employment on-site is made up of several categories such as: Airport Operators; Airline and Passenger Handling; Concessionaries; Control Agencies; and others. There are a substantial number of other contractors and subcontractors that work at the Airport on a regular basis. However as these are not based on-site full time, they are not included in the above employment figures. These include organisations such as cargo agents, construction companies, taxi drivers, IT communications, sign writers, advertising installers and maintenance etc.

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<sup>1</sup> Includes the London Boroughs of Barking and Dagenham, Bexley, Greenwich, Hackney, Lewisham, Newham, Redbridge, Southwark, Tower Hamlets, and Waltham Forest as well as the District of Epping Forest.

2.6 In 2014, 3.65 million passengers travelled through the Airport<sup>2</sup>, the majority for business related travel.

**b) Local Demographic Profile**

2.7 This assessment considers the demographic profile of the communities living within the average summer daytime 57 dB  $L_{Aeq,16h}$  noise contour based on the future year 2025 with the CADP (referred to as the “Study Area”) as illustrated in Figure 1 below. This area includes the communities which would potentially be most affected by the CADP.

2.8 The Study Area is then compared to the demographic profile of Royal Docks ward within which the Airport is located and the overall profile of LBN and London. The Study Area stretches beyond the administrative boundary of LBN into the London Borough of Greenwich (LBG) to the east and the London Borough of Tower Hamlets (LBTH) to the west and the demographic profile of the communities living within these parts of LBG and LBTH have been considered within this assessment. A summary of the demographic data from the Office for National Statistics (ONS) is set out in Table 1 at the end of Section 2. [Although the Study Area has changed slightly \(to accord with a 2025 57 dB  \$L\_{Aeq,16h}\$  noise contour\), the change has not altered the area of best fit<sup>3</sup> and the likely population size and profile within the Study Area remains broadly the same.](#)

2.9 According to the 2011 Census the population of LBN is 307,980, Royal Docks ward has a population of 10,680. The population of the Study Area is 36,960 residents. The gender profile of residents in the Study Area and the ward is broadly in line with the borough average, 51% males to 49% females, whereas the ward and borough average are both 52% male and 48% female. London as whole has marginally more females, 51%, compared to 49% males.

2.10 The Study Area has a large working age population, 74% of residents are aged between 16 and 65 years. The ward level working age population is similar, 75%. These are both proportionally higher compared to LBN at 71% and London at 69%. The proportion of residents living in both the Study

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<sup>2</sup> Civil Aviation Authority (CAA) Airport Statistics.

<sup>3</sup> [The population profile of the Study Area is based on an “area of best fit” using ONS output areas – the smallest spatial area for which reliable demographic data is available.](#)

Area and Royal Docks ward aged over 65 years is lower at 4%, than the borough at 7% or London as a whole at 11%. There are 8,670 children and young people (under 16 years) living within the Study Area. The age profile of children and young people is broadly in line with the other spatial scales considered here. Within the Study Area, 22% of the population are under 16 years, this compares to 21% in the ward, 23% in LBN and 20% in London as a whole.

Figure 1: Spatial Context



2.11 There are 3,850 people within the Study Area living with disabilities or long term health problems, this equates to 10% of the population of this area. This is broadly in line with the ward average but lower than the average for LBN and London as a whole where 14% of the population are living with disabilities or long term health problems. The proportion of children (under 16 years) living with disabilities or long term health problems in both the Study Area and ward, 3.5%, are broadly in line with the LBN (3.6%) and London (3.4%) averages.

- 2.12 LBN is an ethnically diverse borough, 71% of residents are from Black, Asian and Minority Ethnic (BAME) backgrounds. There is a large Asian community making up 43% of the total resident population of the borough. Royal Docks ward is less ethnically diverse than the borough average, 54% of residents are from BAME backgrounds, compared to 40% across London as a whole. The largest ethnic group in Royal Docks ward is the Black community at 24% and the Asian community at 20%. Within the Study Area 57% of residents are from BAME backgrounds. The largest ethnic group living in this area are Black at 26% and the Asian community at 22%.
- 2.13 The predominant religion is Christianity in the Study Area, Royal Docks ward, LBN and London, 51%, 54%, 40% and 48% respectively. LBN has a large Muslim community, 32% of all residents, compared to 14% in the Study Area, 13% in Royal Docks ward and 12% across London.
- 2.14 According to Claimant Count data from September 2014<sup>4</sup>, there were 6,573 residents in LBN claiming unemployment related benefits. This is a rate of 3% of working age residents. This compares to 2.5% in Royal Docks ward and 2.4% across London. There is a slightly lower proportion of female job seekers compared to male. Locally 47% are female in Royal Docks ward, 42% across LBN and 41% in London as a whole. Claimant count rate data is not available below ward level and therefore it is not possible to consider claimant count rate at the Study Area level. However the number of claimants within the Study Area in September 2014 was 1,136 claimants.
- 2.15 The level of car ownership in the Study Area and LBN are broadly similar. Within the Study Area, 49% of households have one or more cars or vans, this compared to 48% across LBN. There is a higher level of car ownership within Royal Docks ward, 56% which is marginally lower than the London wide average of 58%.
- 2.16 There are over 101,500 households within LBN. There are a higher proportion of family households within LBN (39%) compared to London as whole (31%). However, the proportion of family housing in the Study Area (32%) and the ward (31%) is lower than the borough average.

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<sup>4</sup> Office of National Statistics, (2014), Claimant Count Data, September 2014

2.17 LBN has a higher proportion of affordable housing compared to London as whole, 31% of the housing stock is either shared ownership or social rented, which compares to 25% across London. The housing profile of the Study Area is 35% affordable tenures, and the ward is 32%. Owner occupation is lower in the Study Area and ward, 25%, compared to LBN, 33% and London as a whole, 48%. The majority of housing in the Study Area is private rented, 39%, with compares to 41% in the ward, 34% in LBN and 25% across London as whole.

## 3 EQUALITIES IMPACT ASSESSMENT

- 3.1 The Equality Act 2010 forms the basis of anti-discrimination law within Great Britain. The Act replaces the Equal Pay Act 1970, Sex Discrimination Act 1995, Race Relations Act 1976, Disabilities Discrimination Act 1995, Employment Equality (Religion or Belief) Regulations 2003, Employment Equality (Sexual Orientation) Regulations 2003 and Employment Equality (Age) Regulations 2006 in the aim of simplifying and codifying these Acts and Regulations. Section 149 of the Act requires public authorities to have due regard to a number of equality considerations when exercising their functions.
- 3.2 In terms of Equalities Impact, the Equality Act 2010 sets out a list of protected characteristics which prioritise particular characteristics aiming to reduce socio-economic inequalities, which include:
- Age;
  - Disability;
  - Gender reassignment;
  - Marriage and civil partnership;
  - Pregnancy and maternity;
  - Race;
  - Religion or belief;
  - Sex; and
  - Sexual orientation.
- 3.3 The main objective of EqIA has been to ensure public policies and programmes are implemented fairly, in particular with regard to their impact on the target groups identified above. This [Updated](#) EqIA aims to assist the decision-maker to carry out their duty under Section 149 of the Equality Act 2010 by presenting relevant information relating to the CADP project.
- 3.4 In the context of a planning application many of the impacts are inherently more difficult to define or quantify. The physical characteristics of the buildings that are subject to the CADP planning

applications may impact certain protected characteristics through the design of the built environment. Other equalities impacts would depend on the future use of these building and the actions of the occupiers, London City Airport as the owner, and the users of the buildings.

3.5 Nonetheless, there are certain aspects of the proposed CADP that may have impacts on particular equalities target groups:

- Disabilities and Age – impacts of design on accessibility for those with impaired sensory functions or mobility; and
- Gender, Age, Sexual Orientation, Pregnancy and Maternity, Religion and Belief and Race – creation of employment opportunities which could benefit target groups;

3.6 While the scale and significance of these impacts cannot be specifically quantified, the direction of the impacts can be considered (whether they are positive, negative or neutral).

a) **The Scheme**

3.7 On the 26th July 2013 the Airport submitted proposals for the CADP. The City Airport Development Programme (CADP) is made up of CADP1 (13/0128/FUL) which seeks detailed planning permission for new airfield infrastructure and extended passenger facilities and CADP2 (13/01373/OUT) which seeks outline planning permission for a new Hotel with up to 260 bedrooms. [The CADP applications were considered by LBN's Strategic Development Committee on 3<sup>rd</sup> February 2015. At that meeting LBN resolved to grant planning permission for CADP1, subject to conditions and a Section 106 Agreement. However, contrary to his Officers' recommendations, the Mayor of London subsequently directed refusal of CADP 1 on 26<sup>th</sup> March 2015. The permission for CADP2 is expected to be issued later in 2015.](#)

3.8 The proposed CADP will enable the Airport to deliver the facilities required to allow for forecast growth in aircraft and passenger numbers and accommodate larger aircrafts which are more fuel efficient and quieter. This project will allow the Airport to operate up to the levels already agreed under the 2009 Planning Permission in terms of the number of aircraft movements permitted. No changes are proposed to the Airport's opening hours.

**b) Key Impacts on Equality**

- 3.9 Potential impacts arising from the proposed CADP on equalities and the protected characteristics include the inclusivity and accessibility of the built environment and public realm and the new employment opportunities.
- 3.10 The assessment of the local demographic profile of the communities living within the Study Area has shown that there is no concentration of protected characteristics in relation to equalities.
- 3.11 The CADP proposals have been designed to exceed the basic regulations for inclusive design, both the temporary and permanent structures. Facilities have been designed to avoid discrimination and ensure users are treated to the appropriate level of service. Passengers will follow the same route where possible. Where special facilities are required, the placement has been considered to neither highlight nor conceal those with special needs.
- 3.12 The public realm has been designed to be inclusive and accessible, allowing users to move through the public realm equally, confidently and independently.
- 3.13 The following key inclusive and accessible design principles have been considered within the illustrative internal layouts shown on the application drawings to assist passengers and other users with restricted mobility:-
- Dual wheelchair compliant passengers lifts;
  - Designated points for passengers with restricted mobility within arrivals and departures. These may include a waiting area, service counter/ help point which would be equipped with a hearing loop;
  - All public toilet blocks to have disabled facilities and separate accessible baby-changing facilities;
  - Fully equipped “Changing Places” room;
  - Multiple refuges to each stairwell;

- Low or split level customer interface desks/ counters;
- Wheelchair suitable security lanes;
- Passenger information machines should have provision for the vision or hearing impaired;
- Physical features such as lighting/ paving/ signage/ door light reflectance value contrast/ fittings etc, would comply with relevant codes and standards;
- Public realm will not incorporate unnecessary steps or obstacles and level changes are of gradients below 1:20;
- Weather canopies and benches will be provided at pick up and drop off areas;
- Blister paving and blister studding is provided at crossings and continuous blister paving is provided for routes leading the visually impaired between the terminal entry doors and the main crossings;
- Reserved parking spaces directly outside the main terminal entrance/ exit point;
- The hotel will have a dedicated pick up and drop off for users with restricted mobility;
- The hotel will have an appropriate allocation of fully accessible wheelchair rooms;
- Appropriate levels of street lighting;
- Drop kerbs or carriageway tables at all pedestrian crossing points;
- Level changes are managed through well designed steps or the use of ramps at appropriate gradients, as required and as space allows. Where possible both are included for maximum inclusivity; and
- Improved surface level transport access routes.

3.14 None of these measures would change as a result of the Minor Proposed Changes which include a reduction to the footprint of the Western Terminal Extension by 304 sq.m.

- 3.15 The design of the proposed buildings and public realm have considered and employed inclusive design principles and regulations, it is therefore assessed that the proposed CADP would not result in a negative impact on equalities in relation to accessibility.
- 3.16 The proposed CADP will generate additional employment within the Airport. According to the Socio-economic Chapter of the [UES \(Chapter 7\)](#), the CADP will generate approximately [1,440](#) new jobs by [2025](#) compared to the [2014 baseline](#). This includes the employment generated by the increased operational activity at the Airport and the proposed Hotel. The [UES](#) estimates the construction of the project would create [355](#) FTE construction jobs (with a further 106 indirect and induced FTE jobs, giving a total of [461](#) FTE).
- 3.17 As a local employer the Airport supports local employment initiatives to maximise the local benefit of employment within the community. The Airport supports local people into work by working with LBN and maintaining links with local employment organisations such as Newham Workplace, Skillsmatch in Tower Hamlets and Greenwich Local Labour and Business.
- 3.18 The Airport has historically delivered in-house employment and training programmes for existing staff and activities to support local job seekers in applying for jobs within the Airport. As part of the Section 106 Agreement associated with the 2009 Planning Permission the Airport provides work experience for a minimum of 40 residents from LBN and a minimum of eight residents from the London Boroughs of Bexley, Barking and Dagenham, Greenwich and Tower Hamlets. In addition the Airport runs a Work Experience Scheme offering placements for students over 16 studying for qualifications within the travel sector. 'Take off into work' is a programme run through Newham Workplace which promotes jobs at the Airport for Newham residents.
- 3.19 It can be expected that the additional employment supported by the proposed CADP would offer a range of different jobs with different skills levels. This would have a positive impact on the local labour market. This beneficial impact could be maximised through the initiatives such as those outlined above. Employment and training initiatives would be secured through the Section 106 agreement through negotiation with LBN to agree an appropriate package of planning obligations.
- 3.20 The recruitment for new jobs created in the Airport would be required to be based on a non-discriminatory basis in accordance with legal requirements of Part 2 and Part 5 of the Equality Act

2010. In addition to the direct employment created by the CADP there would be wider economic benefits associated with the project including indirect and induced employment in the wider area and procurement and supply chain opportunities for local businesses. Overall the CADP would have a beneficial impact on employment generation and skills and training opportunities; it is therefore assessed that the CADP would not have a negative impact on equalities in relation to employment.

- 3.21 The Public Safety Zones (PSZs) which exist at each end of the Airport's runway will be amended if planning permission is granted for CADP to take account of the expected changes to the number of aircraft movements and the future aircraft fleet. An assessment by NATS shows that the forecast PSZs with the proposed CADP are expected to be smaller than the Without Development scenario due to the nature of the aircraft fleet. A full assessment of the impact of the PSZs is set out in the Planning Statement and also considered within Chapter 7 of the [UES](#). The assessment concludes that none of the 21 sites which overlap the forecast PSZs fall entirely within the risk boundaries. Where overlap occurs the future development of these sites can be managed without prejudicing the regeneration objectives of the areas affected. The impacts on the future development of the sites within the PSZs are not considered to have any negative impacts in relation to equalities.
- 3.22 The operational impact of noise and air quality has been assessed as part of the [UES](#) and subsequent addenda. In addition a full [Updated](#) Health Impact Assessment has been undertaken to assess the potential health impacts of the construction phase and operational phase of the CADP. Studies have linked noise and air quality impacts to a number of health related issues including: annoyance, mental health, cardiovascular and physiological issues, respiratory problems, performance (tasks and academic) and night time impacts (sleep disturbance). However, any mitigation required as a result of any significant adverse impacts on noise and air quality have been considered within the [UES](#) and the Health Action Plan which is appended to the [Updated](#) HIA.
- 3.23 Chapter 8 of the [UES](#) considers the potential noise impacts arising from the proposed CADP. Noise impacts arising from the construction phase are not predicted to be sufficient to quantify any adverse health outcome. The impacts are limited to potential annoyance and short term sleep disturbance at the local community level. Construction noise will be mitigated through a number of measures including a Construction Noise and Vibration Management and Mitigation Strategy,

enforcement of noise limits and sound insulation works. On-going engagement with local communities will manage any residual impacts to enable residents to manage with intermittent disturbance.

- 3.24 The Noise Assessment (Chapter 8) in the [UES](#) concludes that the change in the impact of operational CADP is negligible compared to the without development scenario. Continued mitigation measures will be in place to ensure that noise effects to the local community are controlled to acceptable levels.
- 3.25 The assessment of airborne emissions generated by the construction of the CADP are predicted to be minimal and within the National air quality objectives set to protect health. The [Updated](#) Health Impact Assessment considers local health sensitivities, and concludes that emissions through the construction phase would not quantify any adverse health outcome. As with all major construction projects, dust impacts can be anticipated. However, should planning permission for CADP be granted and following the subsequent implementation of a Dust Management Plan (DMP) approved by LBN as local planning authority, potential impacts would be limited to minor annoyance and do not present a risk to local community health.
- 3.26 The [Updated](#) Health Impact Assessment finds that the operational air quality impacts arising from CADP remain within the environmental standards set to protect health and would not result in any change in local health outcome. The impact on air quality ([UES Chapter 9](#)) has been assessed as being insignificant following mitigation measures embedded within the existing Air Quality Action Plan.
- 3.27 Both noise and air quality levels would not differ significantly from those already accepted under the 2009 Planning Permission. Therefore the proposed CADP would not result in any significantly adverse impacts on the surrounding local communities, and therefore is assessed not to have any negative impact on equalities in relation to noise and air quality impacts. Full details of the potential impacts on the surrounding community are set out in the [UES](#) and the [Updated](#) Health Impact Assessment.
- 3.28 The CADP planning applications have undergone an extensive pre-application consultation and scoping process to ensure members of the public and other interested parties have the opportunity



to review, comment and input into the proposals for the CADP. Public consultation events have been held in Newham, Tower Hamlets, Bexley and Greenwich. In addition to this there have been specific introductory and update meetings with community groups, Airport neighbours, politicians and business organisations with an interest in the future of the Airport. The consultation process was widely publicised to ensure all members of the public have had the opportunity to view and comment on the proposals. Therefore it is assessed that the consultation process does not have a negative impact on equalities. Full details of the consultation process are set out in the Statement of Community Involvement which accompanied the planning applications.

## 4 CONCLUSION

- 4.1 Overall the proposed CADP would allow for the continued success and growth of the Airport up to the permitted levels agreed. The CADP has been designed to be inclusive and accessible in order to minimise impacts on any passengers or users with restricted mobility. The CADP will create **1,440 FTE** jobs once fully operational, as well as up to **461 FTE** jobs during the construction of the project. Given the level of local employment from the existing jobs in the Airport with over half living within East London, it can be expected that the new jobs would continue to support local employment within East London, which is a particularly diverse part of London, through the Section 106 obligations. New employment opportunities would benefit the local labour market which in turn helps to reduce social inequality and deprivation.
- 4.2 Overall it has been assessed that the CADP would not have a negative impact on equalities. Table 2 below summarises the potential impacts affecting each protected characteristic as defined by the Equality Act 2010.

**Table 1: Equalities Impact**

Characteristic	Impact	Reason
Age	Positive	Inclusive and accessible design principles have been built in in order to ensure passengers and users with mobility restrictions can use the new facilities with ease.
	Neutral	Employment created by the CADP will be required to adhere to anti-discrimination laws with respect to age as set out in the Equality Act 2010.
Disability	Positive	Inclusive and accessible design principles have been built in in order to ensure passengers and users with mobility restrictions can use the new facilities with ease.
	Neutral	Employment created by the CADP will be required to adhere to anti-discrimination laws with respect to disabilities as set out in the Equality Act 2010.
Gender reassignment	Neutral	Employment created by the CADP will be required to adhere to anti-discrimination laws with respect to gender reassignment as set out in the Equality Act 2010
Marriage & civil partnership	No impact	Not applicable

Characteristic	Impact	Reason
Pregnancy & maternity	Positive	Inclusive and accessible design principles have been considered in order to ensure passengers and users with mobility restrictions can use the new facilities with ease.
	Neutral	Employment created by the CADP will be required to adhere to anti-discrimination laws with respect to pregnancy and maternity as set out in the Equality Act 2010.
Race	Neutral	Employment created by the CADP will be required to adhere to anti-discrimination laws with respect to pregnancy and maternity equality as set out in the Equality Act 2010.
Religion or belief	Neutral	Employment created by the CADP will be required to adhere to anti-discrimination laws with respect to religion or beliefs as set out in the Equality Act 2010.
Sex	Neutral	Employment created by the CADP will be required to adhere to anti-discrimination laws with respect to sex as set out in the Equality Act 2010.
Sexual orientation	Neutral	Employment created by the CADP will be required to adhere to anti-discrimination laws with respect to sexual orientation as set out in the Equality Act 2010.