

E1.17

ES Chapter 17 - Health

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**THE CROWN
ESTATE**

East Hemel

17. Health

17.1 Introduction

17.1.1 This Chapter of the ES has been prepared by the Savills Health and Social Impact Assessment team within the Environment and Infrastructure department.

17.1.2 The chapter presents the environmental assessment of the likely significant effects (both positive and negative) of the Development during construction and operation with respect to the existing and future community. It should be read in conjunction with the description of the Development provided in Chapters 5 and 6 and with respect to the relevant sections of inter-related ES technical assessments (most notably **Chapter 11: Air Quality**, **Chapter 12: Noise**, **Chapter 16: Socio-economics** and **Chapter 12: Transport and Access**), which inform the assessment of human health.

17.2 Assessment Methodology and Significance Criteria

Assessment Methodology

Relevant Guidance

National Planning Practice Guidance

17.2.1 The National Planning Practice Guidance (NPPG) (Ministry of Housing, Communities and Local Government, 2022) supports the NPPF and provides guidance across a range of topic areas, including 'healthy and safe communities'. It is recognised in the NPPG that the design and use of the built and natural environments, including green infrastructure are major determinants of health and wellbeing, whereby a "healthy place" is one which:

- supports and promotes healthy behaviours and environments and facilitates a reduction in health inequalities for people of all ages;
- will provide the community with opportunities to improve their physical and mental health, and support community engagement and wellbeing;
- is inclusive and promotes social interaction; and
- meets the needs of children and young people to grow and develop, as well as being adaptable to the needs of an increasingly elderly population and those with dementia and other sensory or mobility impairments.

17.2.2 In addition, engagement with individuals and/or organisations, such as the relevant Director(s) of Public Health, will help ensure local public health strategies and any inequalities are considered appropriately.

IEMA Guide to Determining Significance for Human Health in EIA

- 17.2.3 The IEMA Guide to Determining Significance for Human Health in EIA (IEMA, 2022) responds to gaps and inconsistencies across existing guidance as to how health, particularly regarding significance (including sensitivity and magnitude classifications), is assessed in EIA. This promotes greater consistency in the assessment process; particularly in how EIA health conclusions are reached, interpreted, defended and applied to the greatest positive effect.
- 17.2.4 The specific application of the IEMA Guide to Determining Significance for Human Health in EIA is outlined in the “Significance Criteria” part of this section.

Consultation

- 17.2.5 A formal request for an EIA Scoping Opinion was submitted to Dacorum Borough Council and St Albans District Council on the 11th of December 2024 (**ES Volume 3 Appendices 2.2 and 2.3**) and Scoping Opinions were received from these councils on the 29th January 2025 and 31st January 2025 respectively. A summary of these comments in relation to human health are summarised in **Table 17.1**.
- 17.2.6 Health-specific consultation was undertaken on the 12th March 2025 with public health representatives at Hertfordshire County Council and Dacorum District Council to agree the scope and methodology of the assessment and discuss local health priorities and integration of healthy urban design/placemaking principles.

Table 17.1: Summary of Scoping Opinion comments

Scoping Opinion comment	How/where addressed
St Albans District Council	
The scope is considered acceptable. It is noted that a Health Impact Assessment (HIA) will be prepared, and this will form part of the EIA.	<p>As outlined in the Scoping Report “It is proposed to embed the principles and methods of “health impact assessment” (HIA) within the regulatory EIA requirements, which includes the application of significance criteria”.</p> <p>This is consistent with the IEMA Guide to Effective Scoping of Human Health in EIA, which states that “Where an EIA is undertaken and there is also a requirement for HIA, projects should normally meet the HIA requirement through the EIA Report health chapter.”</p> <p>On the above basis and considering that there is no local policy requirement for HIA, no separate HIA has been provided in this instance.</p>
The comments from HCC Public Health must be taken into account insofar as they are relevant to the identification of significant environmental effects at the EIA stage.	As outlined above, health-specific consultation was undertaken on the 12 th March 2025 with public health representatives at Hertfordshire County Council and Dacorum District Council to agree the scope and methodology of the assessment and discuss local health priorities and integration of healthy urban design/placemaking principles.
It is noted that detailed matters including the specifics of the delivery of affordable housing, contribution to modal shift, electric charging points, car clubs, safe crossing points are relevant to the	The acknowledgement of these detailed matters to be addressed as part of the wider application at outline or reserved matters stage is noted.

Scoping Opinion comment	How/where addressed
<p>wider application at outline or reserved matters stage.</p>	
<p>Dacorum Borough Council</p>	
<p>Table 7.11.24 provides all of the determinants of health and justification over why they are proposed to be scoped in or out. For example, physical activity is scoped out for the construction phase due to the current lack of public accessibility on the site. However, it is scoped in for the operational phase because the proposals include large amounts of accessibly open space with the potential to provide physical activity and recreational benefits. The assessment of these determinants of health is comprehensive.</p>	<p>Agreement of the proposed scope of the human health assessment is acknowledged.</p>
<p>Several consultees responded to this Chapter. For example, the NHS Hertfordshire and West Essex Integrated Care Board 'welcomes the intention to scope in health' and is 'in full agreement that health and social care services and facilities is scoped in' at the completed and operational stage of the development. They conclude that the Scoping Report has 'identified the priority health topics and matters that need to be addressed'.</p>	<p>Agreement of the proposed scope of the human health assessment by the NHS Hertfordshire and West Essex Integrated Care Board is acknowledged.</p>
<p>HCC Public Health also commented on the Scoping Report, highlighting that there is a range of guidance and resources available to inform the production of a Health Impact Assessment ("HIA"). The Scoping Report acknowledges that a HIA will be included as part of the EIA Assessment.</p>	<p>As outlined in the Scoping Report "It is proposed to embed the principles and methods of "health impact assessment" (HIA) within the regulatory EIA requirements, which includes the application of significance criteria".</p> <p>This is consistent with the IEMA Guide to Effective Scoping of Human Health in EIA, which states that "Where an EIA is undertaken and there is also a requirement for HIA, projects should normally meet the HIA requirement through the EIA Report health chapter."</p> <p>On the above basis and considering that there is no local policy requirement for HIA, no separate HIA has been provided in this instance.</p>
<p>Paragraph 7.11.12 acknowledges the policy context for the assessment of health and includes SACDC's Draft Local Plan 2041 (Regulation 18 Public Consultation). The list and assessment of these documents should be updated as the local plans progress. Reference to DBC's emerging plan is currently absent and should form part of the assessment.</p>	<p>The Dacorum Local Plan to 2041 is included in Appendix 17.1: Health Policy Review.</p>
<p>The health chapter will draw upon technical outputs from other chapters such as air quality, noise and vibration, transport and access and socio-economics.</p> <p>These assessments, when combined, would provide suitable information for assessing health.</p>	<p>Agreement of the proposed approach of the human health assessment to draw from and build upon technical outputs from other chapters such as air quality, noise and vibration, transport and access and socio-economics is acknowledged.</p>

Geographical scope

- 17.2.7 The Development is located within the Verulam and Redbourn wards, within the St Albans District. Adjacent to the Site are wards of which some are in the Dacorum District. As such, both districts have been considered in our assessment.
- 17.2.8 Environmental health determinants (such as changes to air quality and noise exposure) are likely to have a local impact where the potential change in hazard exposure is limited by physical dispersion characteristics. As a result, the Study Area for health-specific baseline statistics relating to human health effects focuses on the 'ward study area', composed of Verulam ward, Redbourn ward, and the following neighbouring wards to the site: Adeyfield East; Leverstock Green and Woodhall Farm wards in Dacorum Borough, with 'district study area' (Dacorum and St Albans), region (Hertfordshire) and national (England) averages used as comparators.
- 17.2.9 Wider socio-economic health determinants (such as employment and related income generation) have a wider geographic scope of influence than environmental health determinants, due to the willingness to commute significant distances to work. While ward-level data has been collected for context, the focus for socio-economic baseline data is on district-level data, with county/regional and national averages used as comparators.
- 17.2.10 The Study Area defining the relevant sensitive receptors identified for assessment purposes remains consistent with the inter-related technical disciplines assessed within the ES, which the human health topic relies upon.

Temporal scope

- 17.2.11 The chapter assesses potential effects across a range of health determinants during both the construction and operation phases of the Development.

Significance Criteria

Receptor sensitivity

- 17.2.12 Within a defined population, individuals will range in level of sensitivity due to a series of factors such as age, socio-economic deprivation and the prevalence of any pre-existing health conditions which could become exacerbated. These individuals can be considered particularly vulnerable to changes in environmental and socio-economic factors (both adversely and beneficially) whereby they could experience disproportionate effects when compared to the general population.
- 17.2.13 As an example, the elderly, young children and individuals with chronic pre-existing respiratory conditions would be more sensitive to adverse changes to air quality, with the potential for emergency admission to hospital more likely than for someone of working age who has good respiratory health. On the other hand, an individual who has been unemployed for a long period of time would benefit more from employment opportunities generated by the Development in comparison to an individual who is already employed.

17.2.14 The health sensitivity methodology criteria shown in **Table 17.2** has been used to inform the assessment of significance.

Table 17.2: Health sensitivity methodology criteria

Category/level	Indicative criteria
High	High levels of deprivation (including pockets of deprivation); reliance on resources shared (between the population and the project); existing wide inequalities between the most and least healthy; a community whose outlook is predominantly anxiety or concern; people who are prevented from undertaking daily activities; dependants; people with very poor health status; and/or people with a very low capacity to adapt.
Medium	Moderate levels of deprivation; few alternatives to shared resources; existing widening inequalities between the most and least healthy; a community whose outlook is predominantly uncertainty with some concern; people who are highly limited from undertaking daily activities; people providing or requiring a lot of care; people with poor health status; and/or people with a limited capacity to adapt.
Low	Low levels of deprivation; many alternatives to shared resources; existing narrowing inequalities between the most and least healthy; a community whose outlook is predominantly ambivalence with some concern; people who are slightly limited from undertaking daily activities; people providing or requiring some care; people with fair health status; and/or people with a high capacity to adapt.
Very low	Very low levels of deprivation; no shared resources; existing narrow inequalities between the most and least healthy; a community whose outlook is predominantly support with some concern; people who are not limited from undertaking daily activities; people who are independent (not a carer or dependant); people with good health status; and/or people with a very high capacity to adapt.

17.2.15 Baseline data has been collected to interpret local health and socio-economic circumstance (refer to section 17.3). Overall, it is concluded that the population in the study area generally has a lower burden of poor health when compared to the national average.

17.2.16 As such, when looking at the population in general, the sensitivity of the population within the study area is considered to be “low”. However, this does not exclude the probability that there will be individuals within a defined population who are particularly sensitive and could experience differential/disproportionate effects.

Magnitude of impact

17.2.17 The health magnitude methodology criteria shown in **Table 17.3** has been used to inform the assessment of significance.

Table 17.3: Health magnitude methodology criteria

Category/level	Indicative criteria
High	High exposure or scale; long-term duration; continuous frequency; severity predominantly related to mortality or changes in morbidity (physical or mental health) for very severe illness/injury outcomes; majority of population affected; permanent change; substantial service quality implications.
Medium	Low exposure or medium scale; medium-term duration; frequent events; severity predominantly related to moderate changes in morbidity or major change in quality-of-life; large minority of population affected; gradual reversal; small service quality implications.

Category/level	Indicative criteria
Low	Very low exposure or small scale; short-term duration; occasional events; severity predominantly related to minor change in morbidity or moderate change in quality-of-life; small minority of population affected; rapid reversal; slight service quality implications
Negligible	Negligible exposure or scale; very short-term duration; one-off frequency; severity predominantly relates to a minor change in quality-of-life; very few people affected; immediate reversal once activity complete; no service quality implication.

Significance of effect

17.2.18 The significance of an effect is determined based on the sensitivity of a receptor and the magnitude of an impact. The method employed for this assessment is presented in **Table 17.4** Where a range of significance levels are presented, the final assessment for each effect is based upon expert judgement.

17.2.19 In all cases, the evaluation of receptor sensitivity, impact magnitude and significance of effect has been informed by professional judgement and is underpinned by narrative to explain the conclusions reached.

Table 17.4: Significance matrix

		Sensitivity			
		High	Medium	Low	Very low
Magnitude	High	Major	Major/moderate	Moderate/minor	Minor/insignificant
	Medium	Major/moderate	Moderate	Minor	Minor/insignificant
	Low	Moderate/minor	Minor	Minor	Insignificant
	Negligible	Minor/insignificant	Minor/insignificant	Insignificant	Insignificant

17.2.20 **Table 17.5** provides a description of each significance level.

Table 17.5: Significance conclusion and reasoning related to public health

Category/level	Indicative criteria
Major (significant)	<p>The narrative explains that this is significant for public health because:</p> <ul style="list-style-type: none"> Changes, due to the project, have a substantial effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by referencing relevant policy and effect size (magnitude and sensitivity levels), and as informed by consultation themes among stakeholders, particularly public health stakeholders, that show consensus on the importance of the effect. Change, due to the project, could result in a regulatory threshold or statutory standard being crossed (if applicable). There is likely to be a substantial change in the health baseline of the population, including as evidenced by the effect size and scientific literature showing there is a causal relationship between changes that would result from the project and changes to health outcomes. In addition, health priorities for the relevant study area are of specific relevance to the determinant of health or population group affected by the project.

Category/level	Indicative criteria
Moderate (significant)	<p>The narrative explains that this is significant for public health because:</p> <ul style="list-style-type: none"> Changes, due to the project, have an influential effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by referencing relevant policy and effect size, and as informed by consultation themes among stakeholders, which may show mixed views. Change, due to the project, could result in a regulatory threshold or statutory standard being approached (if applicable). There is likely to be a small change in the health baseline of the population, including as evidenced by the effect size and scientific literature showing there is a clear relationship between changes that would result from the project and changes to health outcomes. In addition, health priorities for the relevant study area are of general relevance to the determinant of health or population group affected by the project.
Minor (not significant)	<p>The narrative explains that this is significant for public health because:</p> <ul style="list-style-type: none"> Changes, due to the project, have a marginal effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by effect size of limited policy influence and/or that no relevant consultation themes emerge among stakeholders. Change, due to the project, would be well within a regulatory threshold or statutory standard (if applicable); but could result in a guideline being crossed (if applicable). There is likely to be a slight change in the health baseline of the population, including as evidenced by the effect size and/or scientific literature showing there is only a suggestive relationship between changes that would result from the project and changes to health outcomes. In addition, health priorities for the relevant study area are of low relevance to the determinant of health or population group affected by the project.
Insignificant	<p>The narrative explains that this is not significant for public health because:</p> <ul style="list-style-type: none"> Changes, due to the project, are not related to the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by effect size or lack of relevant policy, and as informed by the project having no responses on this issue among stakeholders. Change, due to the project, would not affect a regulatory threshold, statutory standard or guideline (if applicable). There is likely to be a very limited change in the health baseline of the population, including as evidenced by the effect size and/or scientific literature showing there is an unsupported relationship between changes that would result from the project and changes to health outcomes. In addition, health priorities for the relevant study area are not relevant to the determinant of health or population group affected by the project.

Assumptions and limitations

17.2.21 The human health assessment draws from and builds upon the technical outputs from inter-related disciplines, most notably: Chapter 11: Air Quality, Chapter 12: Noise, Chapter 16: Socio-economics and Chapter 10: Transport and Access.

17.2.22 As a consequence, the assumptions and limitations of those assessments also apply to any information used in this chapter (e.g. for modelling work undertaken). However, it is considered that the information available provides a suitable basis for the assessment of human health.

17.3 Baseline conditions

17.3.1 Information on population and health was collected through a detailed desktop review of existing studies and datasets. These are summarised in **Table 17.6**.

Table 17.6: Summary of desktop study sources

Indicator	Source	Year
Population estimates	NOMIS	2022
IMD ¹ Score (2019)	OHID ² Local Health	2019
Income deprivation	OHID Local Health	2019
Child poverty	OHID Local Health	2019
Older people in deprivation	OHID Local Health	2011
Older people living alone	OHID Local Health	2011
Overcrowded houses	OHID Local Health	2011
Fuel poverty	OHID Local Health	2020
Unemployment and long-term unemployment	OHID Local Health	2021-22
Life expectancy at birth	OHID Fingertips	2012-2023
Healthy life expectancy	OHID Fingertips	2012-2023
Emergency hospital admission rate (all-causes, coronary heart disease, stroke, heart attack, COPD)	OHID Local Health	2015-16 to 2019-20
Cancer incidence	OHID Local Health	2015-16 to 2019-20
Mortality rate (all-causes, cancer, circulatory disease, coronary heart disease, stroke, respiratory diseases)	OHID Local Health	2016-2020
Hospital stays for self-harm	OHID Local Health	2016-17 to 2020-21
Suicide rate	OHID Local Health	2021-23
Prevalence of overweight children and obesity	OHID Local Health	2017-18 to 2019-20
Smoking prevalence at 15 years	OHID Local Health	2014
Hospital stays for alcohol attributable conditions	OHID Local Health	2016-17 to 2020-21
Percentage of adults classified as overweight or obese	OHID Local Health	2022/23
Percentage of physically active adults	OHID Local Health	2022/23

¹ Index of Multiple Deprivation

² Office for Health Improvement and Disparities

Current Baseline

Introduction

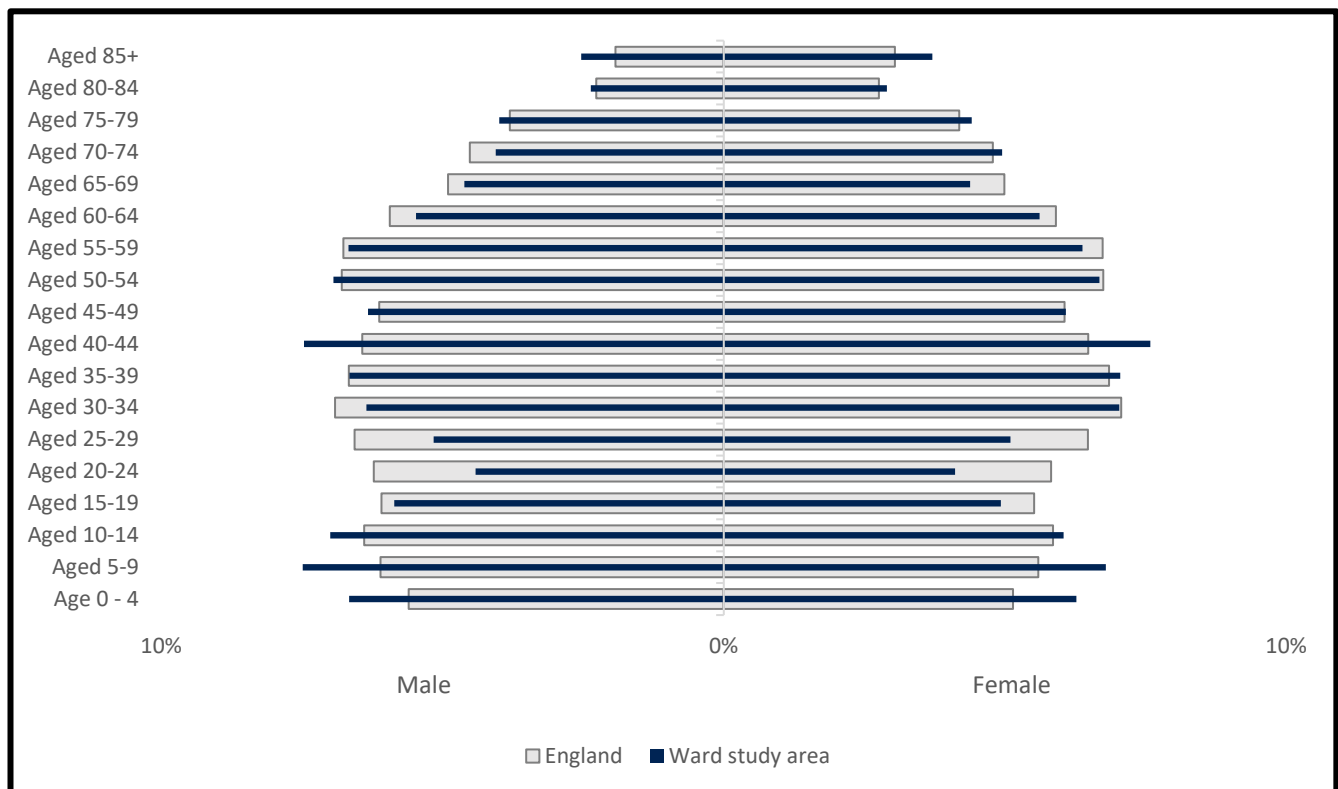
17.3.2 Different communities have varying susceptibilities to both health impacts and benefits due to social and demographic structure, behaviour and relative economic circumstance. The purpose of the human health baseline is to put into context the local health and socio-economic circumstance of the communities surrounding the Development.

17.3.3 The aim of the following information is to outline the local health and socio-economic circumstance of the communities living within Adeyfield East; Leverstock Green; Redbourn; Woodhall Farm and Verulam wards (collectively referred to as the 'ward study area') and Dacorum and St Albans districts (collectively referred to as the 'district study area'). It should be noted that the description of the whole population, and of the populations within the study area, do not exclude the probability that there will be some individuals or groups of people who do not conform to the overall profile.

Demography, deprivation and socio-economic circumstance

17.3.4 As shown in **Figure 17.1**, the ward study area has a higher proportion of the population (both male and female) aged 0-14 years than for England as a whole. In addition, there is a higher proportion of the population (both male and female) aged 40-49 years and 75-85+ years than for England as a whole.

Figure 17.1: Age structure



Source: Nomis Population Estimates/Projections (local authority based and small area)³

17.3.5 As noted previously, while socio-economic data is collected at the ward level for context, the focus for socio-economic baseline statistics should be on the district study area as socio-economic health determinants have a wider geographic scope of influence.

17.3.6 As shown in **Table 17.7**, all indicators at the ward level have a better socio-economic circumstance than the national average.

17.3.7 The district study area also has better socio-economic circumstances than the national average for all indicators analysed. Furthermore, the district study area has better socio-economic circumstances than both the ward study area and Hertfordshire comparators for the majority of indicators. IMD score, income deprivation (%), child poverty (%), unemployment (%), and long-term unemployment rate, were all better in the district study area than all relevant comparators.

Table 17.7: Deprivation and socio-economic circumstance

Indicator	Date	Ward study area	District study area	Hertfordshire	England
IMD Score (2019)	2019	13.0	10.7	12.7	21.7
Income deprivation (%)	2019	8.6	7.2	8.2	12.9
Child poverty (%)	2019	13.8	9.5	11.1	17.1
Older people in deprivation (%)	2019	7.5	8.4	9.9	14.2
Older people living alone (%)	2011	26.5	30.4	31	31.5
Overcrowded houses (%)	2011	5.3	6.5	7.7	8.7
Fuel poverty (%)	2020	10.1	10.2	11.2	13.2
Unemployment (%)	2021-22	3.9	3.4	3.7	5
Long term unemployment (crude rate per 1,000)	2021-22	1.3	0.8	0.9	1.9

Key:

- Better than the England average
- Worse than the England average

Source: OHID Local Health⁴

Life expectancy and physical health

17.3.8 **Figure 17.2** and **Figure 17.3** shows time-series data, spanning 2012-2023 for life expectancy (LE) and healthy life expectancy (HLE) (i.e. the number of years spent in good health) for females and males, respectively, in the district

³ Nomis Population Estimates/Projections (2022): <https://www.nomisweb.co.uk/query/select/getdatasetbytheme.asp?theme=32>, accessed 19/03/2025.

⁴ OHID Local Health (n.d.): <https://www.localhealth.org.uk/#c=home>, accessed 18/03/2025

study area, Hertfordshire and England. HLE data was not available at the district level and so Hertfordshire data is used as a relevant proxy.

17.3.9 Both male and female LE in the district study area has been consistently higher than the Hertfordshire and national averages. Similarly, both male and female HLE in Hertfordshire has been consistently higher than national average.

Figure 17.2: Female life expectancy and healthy life expectancy

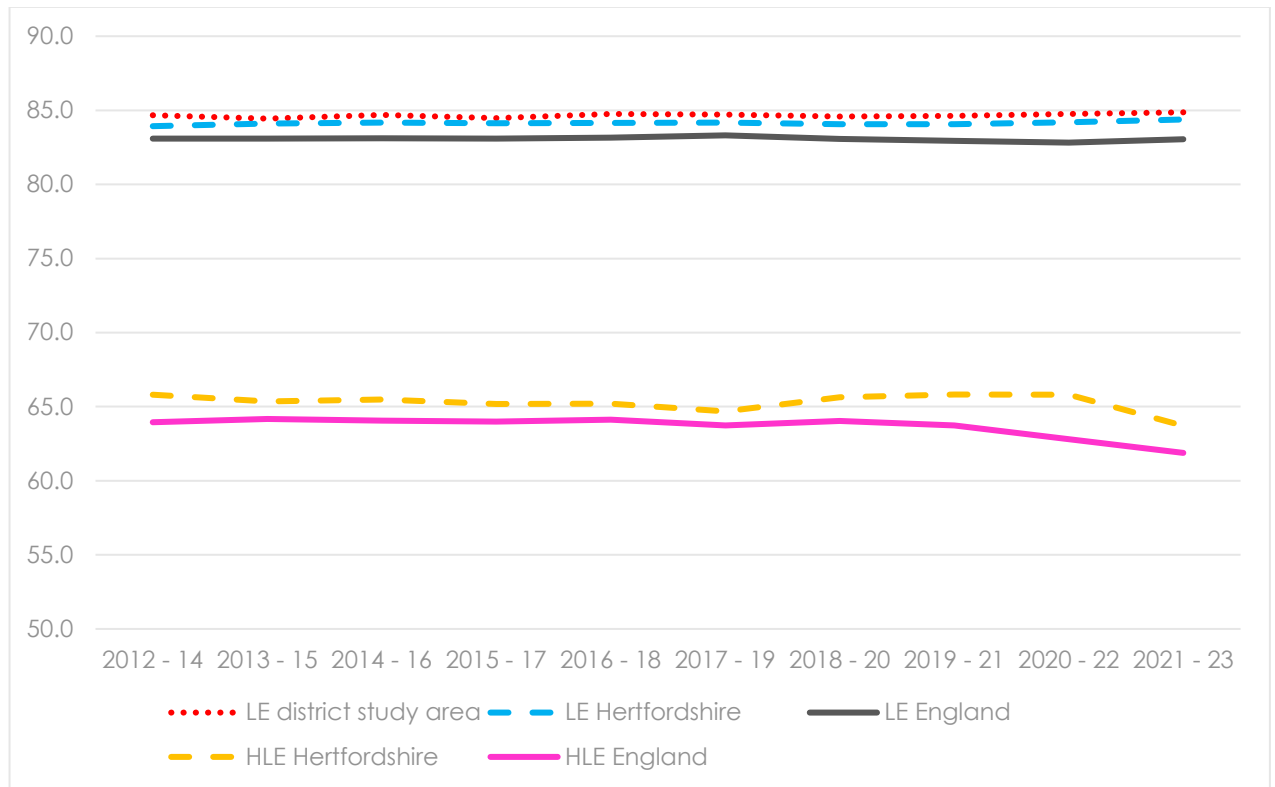
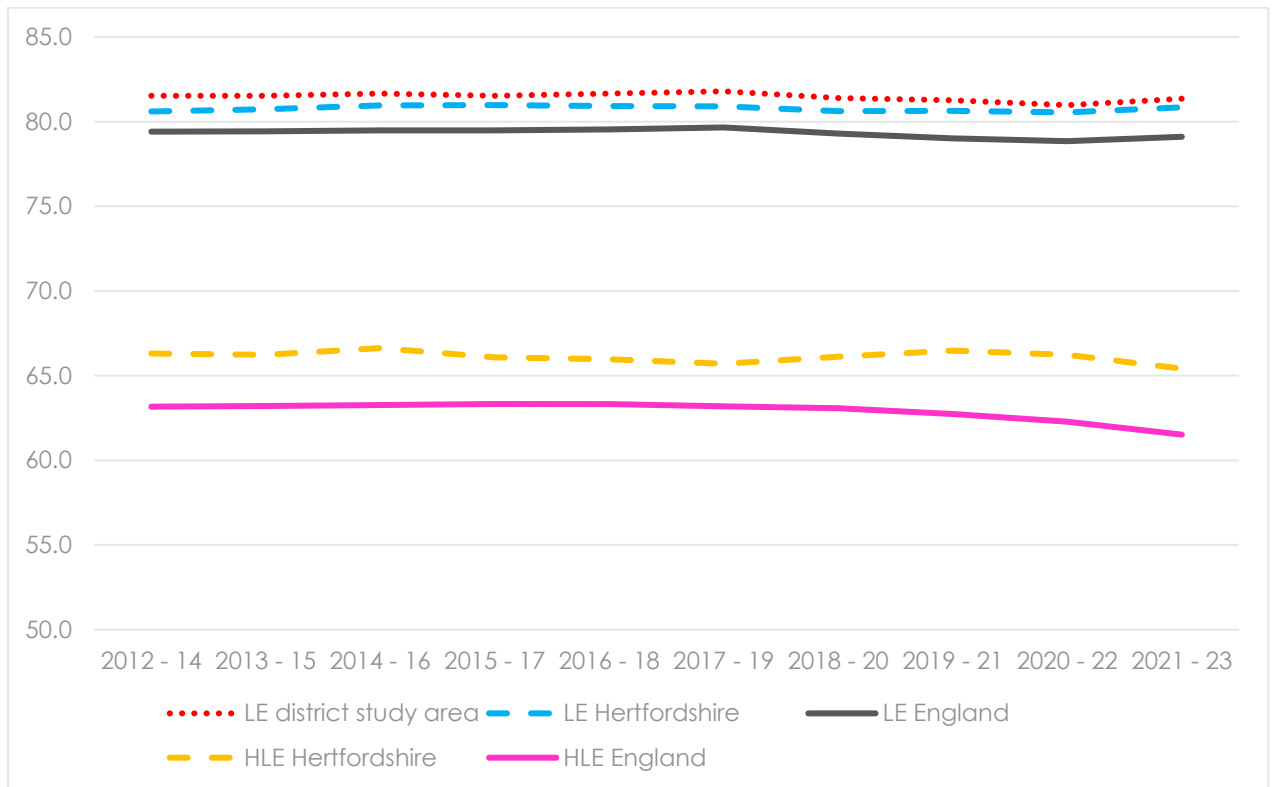


Figure 17.3: Male life expectancy and healthy life expectancy



Hospital admissions and cancer incidence

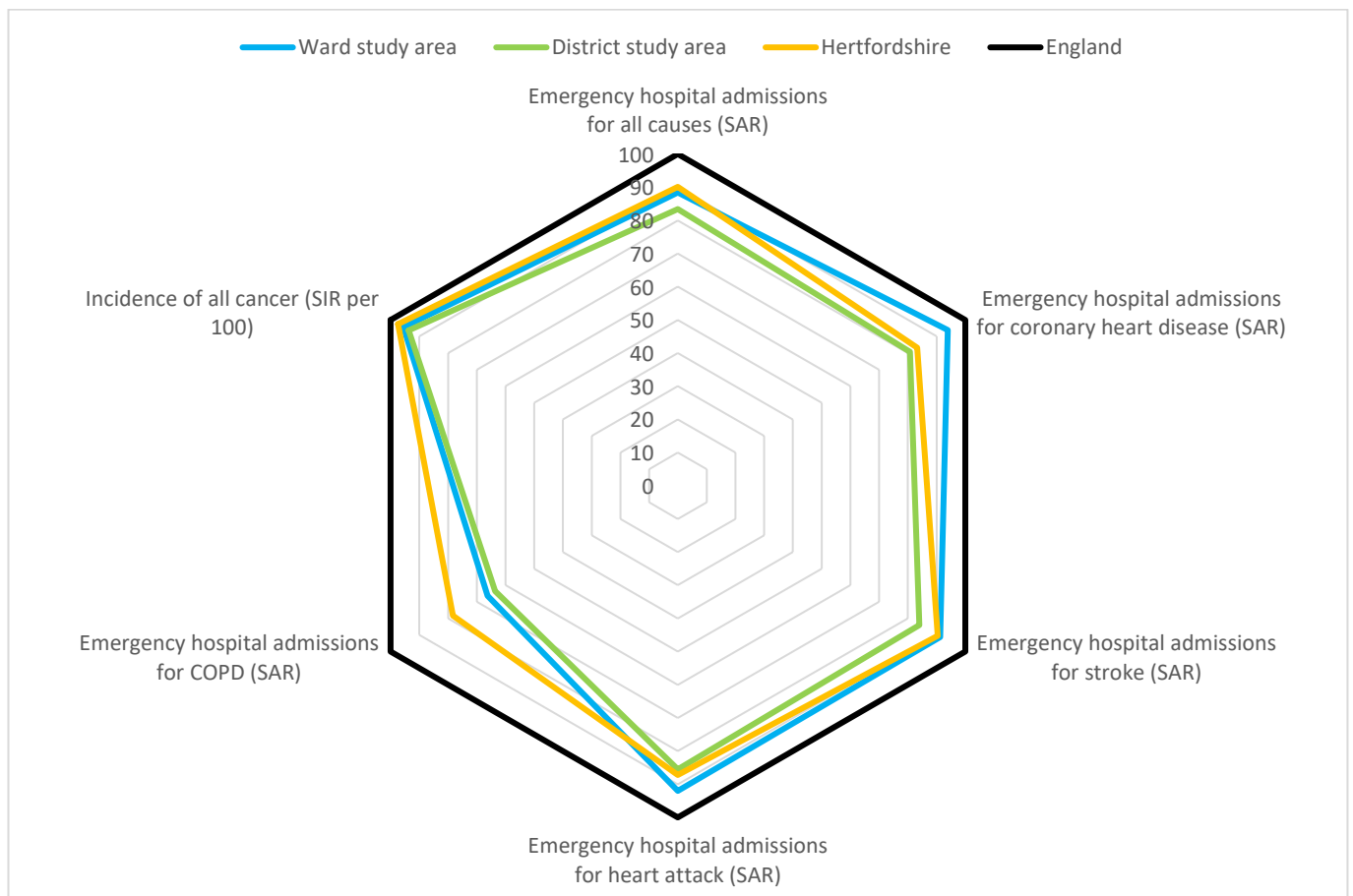
17.3.10 **Figure 17.4** shows Standardised Admission Ratio (SAR)⁵ for the ward study area and all relevant comparators.

17.3.11 Emergency hospital admissions for all causes in the ward study area is lower than the national average but higher than the district study area average. The same is true for all specific health outcomes.

17.3.12 In comparison to Hertfordshire, emergency hospital admissions for stroke and COPD in the ward study area are lower than or equal to the Hertfordshire average. However, hospital admissions for coronary heart disease and heart attack are higher in the ward study area when compared to the Hertfordshire average.

17.3.13 In the absence of emergency hospital admission data for cancer, statistics relating to incidence have been collected. The incidence of all cancer in the ward study area is lower than the national and Hertfordshire averages, but higher than the district study area average.

Figure 17.4: Emergency hospital admissions and cancer incidence statistics



Source: OHID Local Health⁶

⁵ Standardised Admission Ratio (SAR) measures the likelihood of hospital admission in a specific area compared to a standard population, accounting for age, sex, and socioeconomic factors.

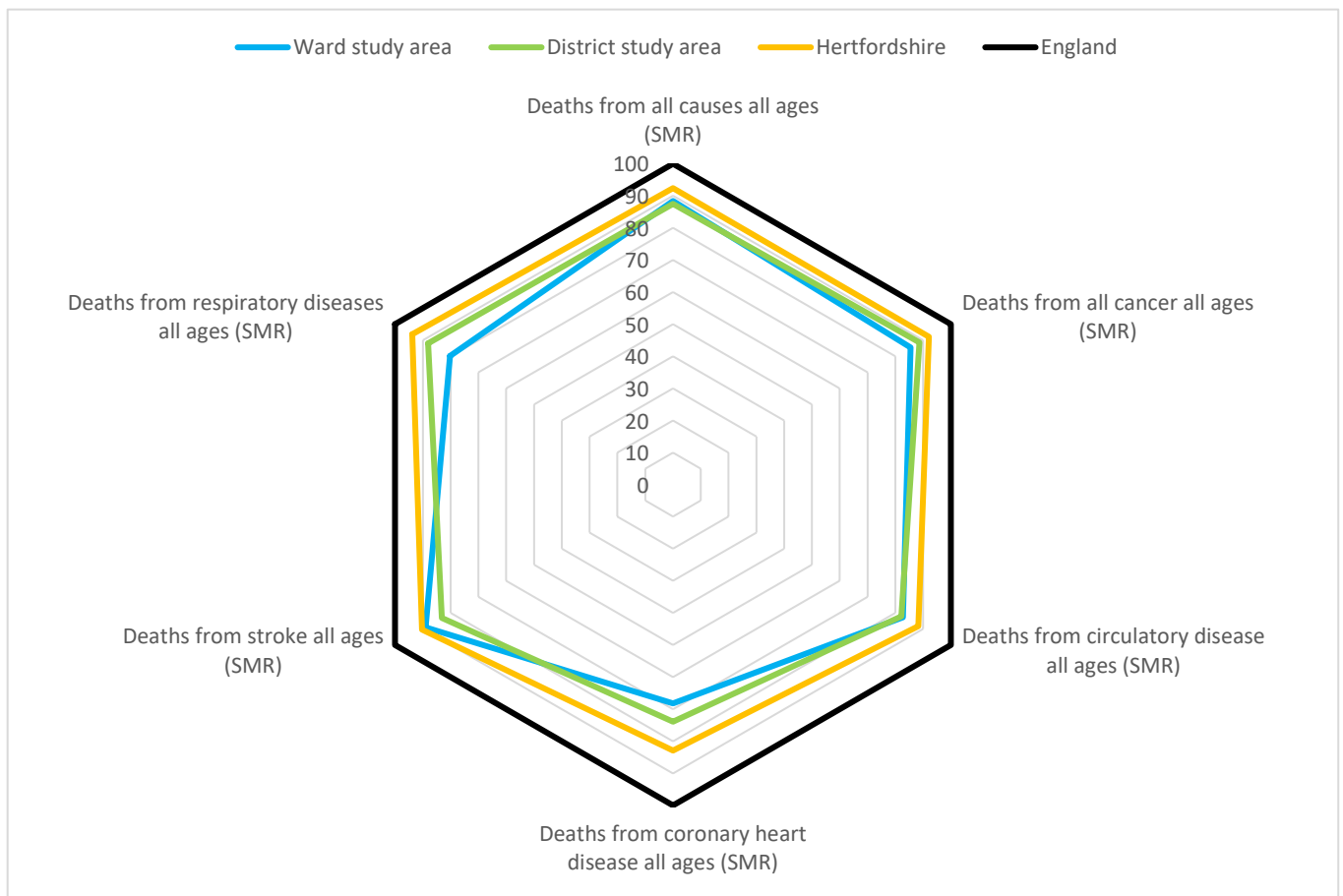
⁶ OHID Local Health (n.d.): <https://www.localhealth.org.uk/#c=home>, accessed 18/03/2025; N.B. Emergency hospital admissions data are Standardised Admissions Ratio (SAR) for the years 2015-16 to 2019-20 and incidence of all cancer are Standardised Incidence Ratio (SIR) per 100 for the years 2015-2019.

Mortality

17.3.14 **Figure 17.5** shows standardised mortality rates (SMR)⁷ for the ward study area and all relevant comparators.

17.3.15 Mortality rates from all causes within the ward study area are lower than national average and Hertfordshire. The same is true when analysing mortality rate for all specific health outcomes (respiratory disease, stroke, coronary heart disease, circulatory disease and cancer). In addition, mortality rate for cancer, coronary disease and respiratory disease in the ward study area are lower than the district study area average.

Figure 17.5: Mortality statistics



Source: OHID Local Health⁸

Mental health, lifestyle and behavioural risk factors

17.3.16 **Table 17.8** shows hospital stays for self-harm and suicide rates, which are indicative of mental health. Hospital stays for self-harm within the ward study area are lower than national average and the district study area. Data relating to suicide rate is not available at ward level; the rate of suicide in the district study area is lower than all relevant comparators.

⁷ A standardized mortality rate (SMR) compares the observed number of deaths in a population to the expected number, based on a reference population, to account for differences in age and sex distribution.

⁸ OHID Local Health (n.d.): <https://www.localhealth.org.uk/#c=home>, accessed 18/03/2025; N.B. *Mortality rate data are Standardised Mortality Rate (SMR) for the years 2016-20*


17.3.17 **Table 17.8** also shows lifestyle and behavioural risk factors in children and adults. When analysing lifestyle and behavioural risk factors of children, the prevalence of overweight children (including obesity) and the prevalence of obesity (including severe obesity) in Reception and Year 6 is lower in the ward study area than national average but higher than or equal to the district study area and Hertfordshire averages. Smoking prevalence at 15 years is lower in the ward study area than all relevant comparators.

17.3.18 In terms of the adult population, hospital stays for alcohol attributable conditions is lower in the ward study area than all relevant comparators. The district study area is the lowest geography for which statistics relating to overweight or obese adults, and the percentage of adults who are physically active, are available for. The percentage of the population in the district study area who are overweight or obese is lower than all relevant comparators. Consistently, the percentage of the population in the district study area who are physically active is higher than all relevant comparators.

Table 17.8: Mental health, lifestyle and behavioural risk factors

Indicator	Date	Ward study area	District study area	Hertfordshire	England
Mental health					
Hospital stays for self-harm (SAR)	2016-17 to 2020-21	60.7	61.8	59.2	100.0
Suicide rate (per 100,000 population)	2021-23	n/a	7.9	8.1	10.7
Lifestyle and behavioural risk factors					
Prevalence of overweight children, including obesity (Reception) (%)	2017-18 to 2019-20	21.4	19.0	19.7	22.6
Prevalence of obesity, including severe obesity (Reception) (%)	2017-18 to 2019-20	9.2	7.2	8.0	9.9
Prevalence of overweight children, including obesity (Year 6) (%)	2017-18 to 2019-20	30.8	26.6	30.2	35.8
Prevalence of obesity, including severe obesity (Year 6) (%)	2017-18 to 2019-20	17.0	14.6	17.0	21.6
Smoking prevalence at 15 years (regular) (%)	2014	4.1	4.5	4.5	5.4
Hospital stays for alcohol attributable conditions (narrow) (per 100,000 population)	2016-17 to 2020-21	78	85.1	89.4	100.0
Percentage of adults classified as overweight or obese	2022/23	n/a	58.4	60.9	64.0
Percentage of physically active adults	2022/23	n/a	75.3	69.8	67.1

Key:

 Better than the England average

 Worse than the England average

Source: OHID Local Health⁹ and OHID Public Health Profiles¹⁰

Health and wellbeing baseline summary

17.3.19 Overall, indicators relating to socio-economic circumstance show that the population living within the ward study area display lower levels of deprivation compared to the national average.

17.3.20 For the majority of indicators analysed which relate to physical health, mental wellbeing and behavioural risk factors the burden of poor health (except childhood obesity) within the population living in the ward study area is considered to be better than national average in most instances but worse than the district study area in most instances.

17.3.21 Overall, it is not considered that the population living within the study area is particularly sensitive to environmental and/or socio-economic changes associated with the Development. However, this does not exclude the probability that there will be some individuals or groups of people who do not conform to the overall profile.

17.4 Likely Effects of the Development and their Significance

The Works

Health effects from access to PRow and open space for physical activity and recreation

17.4.1 As outlined in the Scoping Report, the Development will be built on agricultural land, which is not publicly accessible. As such, any permanent land take associated with the Works would not impact access to open space for physical activity (and recreation).

17.4.2 There are three existing PRow located within the Site which will need to be temporarily diverted during the enabling works and final landscaping works, the purpose of which is to maintain accessibility. On the basis that no PRow will be permanently stopped up, and many reasonable and accessible alternative routes exist nearby (primarily to the north east of the Site) to engage in recreation and physical activity, the magnitude of impact is considered to be negligible. In the context of a low sensitivity receptor, the resultant effect would be insignificant (not significant).

Health effects from changes in transport nature and flow rate

17.4.3 The following assessment themes in Chapter 10: Transport are considered relevant to the assessment of population and health and are considered further:

- severance;
- non-motorised user delay;

⁹ OHID Local Health (n.d.): <https://www.localhealth.org.uk/#c=home>, accessed 18/03/2025

¹⁰ OHID Public Health Profiles (n.d.): <https://fingertips.phe.org.uk/profile/health-profiles>, accessed 18/03/2025

- non-motorised user amenity;
- fear and intimidation; and
- accidents and safety.

17.4.4 A total of 7 road links have been identified as requiring detailed assessment. It should be noted that while these road links may experience increases in traffic that result in the potential onset of impacts, it is important to consider the local context before concluding as such. The results of this contextual assessment are provided in **Table 17.9**.

17.4.5 On the basis that there are no collision clusters on any road link listed attributable to the highway layout or infrastructure, population and health effects from changes in accidents and safety have been scoped out.

Table 17.9: Population and health impacts from changes in construction transport nature and flow rate

Road link	Context	Assessment (Scenario 9 and 10)
Link 25 - Jupiter Drive (West)	Has footways on both sides of the road along its length. This volume of change on this link is not considered to be a material change to the character of the link.	Experiences a 2% increase in total traffic and a 29% increase in HDVs on this link. The increase in HDVs equates to only 16 vehicles across 24 hours. This volume of change on this link is not considered to be a material change to the character of the link. Across all themes relevant to population and health, the effect is considered to be minor adverse in traffic terms.
Link 26 - Jupiter Drive (East)	Has footways on both sides of the road along its length. This volume of change on this link is not considered to be a material change to the character of the link.	Experiences a 3% increase in total traffic and a 38% increase in HDVs on this link. The increase in HDVs equates to only 19 vehicles across 24 hours. This volume of change on this link is not considered to be a material change to the character of the link. Across all themes relevant to population and health, the effect is considered to be minor adverse in traffic terms.
Link 55 – High Street	Runs through Hemel old town and has shops/restaurants on both sides and is a historic street. There are pedestrians and cyclists present and the road is one way only.	Experiences a 0.4% increase in total traffic and a 20% increase in HDVs on this link. The increase in HDVs equates to only 1 vehicle across 24 hours. This volume of change on this link is not considered to be a material change to the character of the link. Across all themes relevant to population and health, the effect is considered to be minor adverse in traffic terms.
Link 74 – Box Lane	A single carriageway road with a footway on one side for the majority of the route and has lighting along the majority of its length. Speed limits vary along the length of the road depending on the environment as parts are 30mph, 40mph and 50mph.	Experiences a 1% increase in total traffic and a 10% increase in HDVs on this link. The increase in HDVs equates to only 34 vehicles across 24 hours, which equates to just over 1 per hour. This volume of change on this link is not considered to be a material change to the character of the link. Across all themes relevant to population and health, the effect is considered to be minor adverse in traffic terms.
Link 88 – Belswains Lane (South)	A single carriageway road with a footway on both sides and lighting along the majority of its length. It has	Experiences a 0.7% increase in total traffic and a 18% increase in HDVs on this link. The increase in HDVs equates to only 19 vehicles across 24 hours. This volume

Road link	Context	Assessment (Scenario 9 and 10)
	residential properties along the road with accesses to minor roads and driveways along its length.	of change on this link is not considered to be a material change to the character of the link. Across all themes relevant to population and health, the effect is considered to be minor adverse in traffic terms.
Link 95 – Bennetts End Road	A 30mph single carriageway road with a footway on both sides and lighting along its length. It has residential properties along the road with accesses to minor roads and driveways along its length and occasional parking on street.	Experiences a 1.7% increase in total traffic and a 16% increase in HDVs on this link. The increase in HDVs equates to only 16 vehicles across 24 hours. This volume of change on this link is not considered to be a material change to the character of the link. Across all themes relevant to population and health, the effect is considered to be minor adverse in traffic terms.
Link 102 – Westwick Row	A single carriageway road which is narrow in places. It provides access to residential properties and farms and borders the Proposed Development site.	Experiences a 32% increase in total traffic and no change in HDVs on this link. The increase in total traffic equates to only 173 vehicles across 24 hours. This volume of change on this link is not considered to be a material change to the character of the link. Across all themes relevant to population and health, the effect is considered to be minor adverse in traffic terms.

- 17.4.6 In summary, for all road links assessed, the themes relevant to population and health are assessed as experiencing effects which are either minor in traffic terms.
- 17.4.7 On this basis, the magnitude of impact is considered to be low. In the context of a low sensitivity receptor, the resultant effect would be minor adverse (not significant).

Health effects from changes in socio-economic factors

- 17.4.8 As outlined in Chapter 16: Socio-economics, it is estimated that the Development will support an average of around 1,650 gross direct temporary FTE construction jobs per annum over the estimated 17-year construction period, which is equivalent to around 3.7% of the total construction workforce in Hertfordshire. This reduces to 0.7% when considered at the East of England scale.
- 17.4.9 The number of construction jobs provided is relatively high, and while the construction phase is long-term in nature, the majority of skillsets required (e.g. carpentry, plumbing, electricians, groundworks, plastering, decorating, engineering, bricklaying, tiling, cladding) would only be needed intermittently and would not have a long-term presence on-site. Other jobs generated (such as those associated with project management) would be required consistently throughout the construction phase, however these jobs do not account for the majority generated.
- 17.4.10 As a result, while the construction phase is considered long-term, taking into account the temporary nature of the majority of employment opportunities associated with this, health and quality of life benefits would be limited to the individual and is not anticipated to result in any measurable impact to baseline health outcomes at the population level. On this basis, the magnitude of impact is considered to be low. In the context of a low sensitivity receptor, the resultant effect would be minor beneficial (not significant).

Health effects from changes in air quality

- 17.4.11 As outlined in Chapter 11: Air Quality, there is potential for dust emissions from earthworks, on-site construction activities and trackout. While this is the case, following the implementation of suitable mitigation measures, which would be set out in the CEMP, the resultant dust impacts would not be significant.
- 17.4.12 There is also potential for changes in local air quality associated with construction traffic movements. As outlined in Chapter 11: Air Quality, changes in PM₁₀ and PM_{2.5} at all receptors would remain within objective thresholds which are set to be protective of the environment and human health.
- 17.4.13 For NO₂, with the exception of one human receptor (receptor 113), changes in annual mean concentration would also remain within objective thresholds which are set to be protective of the environment and human health. The average change in annual mean NO₂ concentration at all receptors would be 0.17 µg/m³, and receptor 113 is predicted to experience a change in annual mean concentration of 0.14 µg/m³, which is lower than the study area average. It should be noted that this receptor location already exceeds the air quality objective threshold without the Development, and this temporary change would not be sufficient to result in adverse health outcomes.
- 17.4.14 On the above basis, the magnitude of impact is considered to be negligible. In the context of a low sensitivity receptor, the resultant effect would be insignificant (not significant).

Health effects from changes in noise exposure

- 17.4.15 As outlined in Chapter 12: Noise and Vibration, there is potential for changes in noise exposure during the construction phase from construction traffic and on-site construction activities.
- 17.4.16 Based on the predicted level of construction traffic (up to 114 HGV and 21 LGV movements per day), the resultant noise change would be 1.2 dB, occurring on Road Link #19 'B487 Hemel Hempstead Road'. It should be noted that these changes in noise levels are predicted from the roadside, rather than at the façade of residential receptors. On this basis, it is reasonable to assume that the internal impact at residential receptors would be lower than this and are unlikely to be perceptible or cause any material impact on daytime annoyance or sleep disturbance.
- 17.4.17 Regarding noise impacts from on-site construction activities, noise levels from the construction activity associated with the Development at all existing and proposed noise sensitive receptors would be below the lower weekday / Saturday morning cut-off value of 65 dB LAeq, which is set to be protective of the environment and human health. The highest predicted noise levels are predicted at façades of dwellings to the west of the Development, with levels of 58 dB LAeq,T during initial site clearance stages. These impacts are also considered to be negligible in noise terms.
- 17.4.18 It is worth noting that noise impacts during the construction phase would also be temporary, intermittent and transient in nature, and is unlikely to persist at any one receptor for a substantial period of time. Furthermore, construction activities would be limited to daytime hours only, and therefore potential impacts on health and wellbeing would be limited to annoyance, rather than sleep disturbance.

17.4.19 On the above basis, the magnitude of impact is considered to be negligible. In the context of a low sensitivity receptor, the resultant effect would be insignificant (not significant).

The Completed and Operational Development

Health effects from access to PRow and open space for physical activity and recreation

17.4.20 As outlined in Chapter 10: Transport, to encourage walking and reduce the need for car journeys a comprehensive network of pedestrian and cycle routes will be provided across the Site, enabling internal journeys to be undertaken without using a car. These routes will link with existing walking and cycling facilities in the local area, in order to encourage active travel between the Site and local facilities.

17.4.21 The Access and Movement Parameter Plan shows the key routes which are briefly described below:

- Connection to the Nickey Line at the at grade crossing;
- A north/south route commencing at the existing farm access on B487 Redbourn Road and in the main utilising existing tracks to reach Punchbowl Lane;
- An east/west route that will run alongside the road link connecting Spencer's Park with the STC and continue further to the east to serve the secondary school and local centre;
- Further connection opportunities to the Cherry Tree Quietway;
- A route running along the eastern side of the southern residential neighbourhood that links the A414 and A4147 Hemel Hempstead Road (allowing a connection to the proposed cycle route on the A4147 to St Albans);
- Connection to Green Lane in the north west corner of southern residential area; and
- A new foot/cycle bridge over the A414 at Breakspear to facilitate active travel between the north/central and southern areas.

17.4.22 The delivery of the above ensures a walkable and cyclable neighbourhood, which facilitates the uptake of healthy behaviours associated with using modes of active transport (i.e. physical activity) to access local services and facilities. The absence of such walking and cycling infrastructure would likely have adverse impacts; therefore, the provision of this provides indirect benefits to future occupants, and the host community who may use this infrastructure in a similar way.

17.4.23 On this basis, the magnitude of impact is considered to be low (beneficial). In the context of a low sensitivity receptor, the resultant effect would be minor beneficial (not significant).

Health effects from changes in transport nature and flow rate

17.4.24 The following assessment themes in Chapter 10: Transport are considered relevant to the assessment of population and health and are considered further:

- severance;

- non-motorised user delay;
- non-motorised user amenity;
- fear and intimidation; and
- accidents and safety.

17.4.25 As outlined in Chapter 10: Transport, the operational assessment is cumulative in nature. For the core assessment, a total of 14 road links have been identified as requiring detailed assessment. It should be noted that some links within the study area are expected to experience reductions in total traffic and/or HDV traffic flows; this occurs where traffic is reassigned to the most convenient route if its chosen route becomes less convenient.

17.4.26 While these road links may experience increases in traffic that result in the potential onset of impacts, it is important to consider the local context before concluding as such. The results of this contextual assessment are provided in **Table 17.9**. The scenarios assessed are consistent with those defined in Chapter 10: Transport, which can be summarised as follows:

- Scenario 3: Reference Case: Base + Committed Development;
- Scenario 4: Reference Case + Proposed Development;
- Scenario 5: Base Year + Committed and Cumulative Development; and
- Scenario 6: Base Year + Committed and Cumulative Development + East Hemel Hempstead.

17.4.27 On the basis that there are no collision clusters on any road link listed attributable to the highway layout or infrastructure, population and health effects from changes in accidents and safety have been scoped out.

Table 17.10: Population and health impacts from changes in operational transport nature and flow rate

Road link	Context	Assessment (Scenario 3 and 4)	Assessment (Scenario 5 and 6)
Link 4 - M1 SB On/Offslip (J8 Bridge)	There are no crossing points and a footway separated by guard railing is provided to the south of the road. Due to the strategic nature of this link, only minimal pedestrians have been recorded in this location and no cyclists have been recorded. There are no immediate desire lines, apart from people making use of the PRoW network to the east of the M1.	Experiences a 22% increase in total traffic and a 43% increase in HDVs on this link. Taking into account the context, this volume of change on links to/from the motorway is not considered to be a material change to the character of the link, which is strategic in nature. Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.	Experiences a 23% increase in total traffic and a 40% increase in HDVs on this link. Taking into account the context, this volume of change on links to/from the motorway is not considered to be a material change to the character of the link, which is strategic in nature. Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.
Link 6 - A414 Breakspear Way (East)	There are no existing pedestrian crossing points and a footway is provided to the south of the road. Due to the strategic nature of this link, only minimal pedestrians have been recorded in this location and no cyclists have been recorded. There are no	Experiences a 19% increase in total traffic and a 36% increase in HDVs on this link. Taking into account the context, this volume of change on this link which connects to the M1 is not considered to	Experiences a 20% increase in total traffic and a 36% increase in HDVs on this link. Taking into account the context, this volume of change on this link which connects to the M1 is not considered to

Road link	Context	Assessment (Scenario 3 and 4)	Assessment (Scenario 5 and 6)
	<p>immediate desire lines, apart from people making use of the PRoW network to the east of the M1.</p> <p>A new pedestrian and cycle bridge will be provided across this link to further reduce the potential for any pedestrian/cycle effects.</p>	<p>be a material change to the character of the link, which is strategic in nature.</p> <p>Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.</p>	<p>be a material change to the character of the link, which is strategic in nature.</p> <p>Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.</p>
<p>Link 7 - A414 Breakspear Way (W of Buncefield Lane)</p>	<p>There is a footway along the northside of the A414 along the length of the link, there is a signalised pedestrian crossing in the middle of the link, and to the east of the link there is a newly improved pedestrian footpath. As such, there are some pedestrian movements in the area as new developments have been built on the northside of the A414.</p>	<p>Experiences a 40% increase in total traffic and a 8% increase in HDVs on this link.</p> <p>Taking into account the context, this volume of change on this link while over 30% is not a significant change as the road is currently a dual carriageway and will remain the same and accommodate the same level of traffic.</p> <p>For severance and NMU delay, the effect is considered to be minor in traffic terms. For NMU amenity, and fear and intimidation, the effect is considered to be negligible in traffic terms.</p>	<p>Experiences a 31% increase in total traffic and a 4% increase in HDVs on this link.</p> <p>Taking into account the context, this volume of change on this link while over 30% is not a significant change as the road is currently a dual carriageway and will remain the same and accommodate the same level of traffic.</p> <p>For severance and NMU delay, the effect is considered to be minor in traffic terms. For NMU amenity, and fear and intimidation, the effect is considered to be negligible in traffic terms.</p>
<p>Link 14 - Piccotts End Road (N of Link Road)</p>	<p>Has a footway present along its length on the eastern side of the carriageway. This volume of change on this link is not considered to be a material change to the character of the link.</p>	<p>Experiences a 2% increase in total traffic and a 100% increase in HDVs on this link. The increase in HDVs equates to only 18 vehicles across 24 hours which is less than 1 per hour.</p> <p>Across all themes relevant to population and health, the effect is considered to be minor adverse in traffic terms.</p>	<p>n/a</p>
<p>Link 25 - Jupiter Drive (West)</p>	<p>Has footways on both sides of the road along its length. This volume of change on this link is not considered to be a material change to the character of the link.</p>	<p>n/a</p>	<p>Across a day there is no change in total traffic and a 13% increase in HDVs on this link. However, based on further investigation while the level of HDVs increases by 10% this increase is only 9 vehicles across 24 hours.</p> <p>Taking into account the context, this volume of change on this link is not considered to be a material change to the character of the link.</p> <p>Across all themes relevant to population and health, the effect is considered to be minor in traffic terms.</p>
<p>Link 26 - Jupiter Drive (East)</p>	<p>Has footways on both sides of the road along its length. This volume of change on this link is not considered to be a material change to the character of the link.</p>	<p>Experiences an 8% increase in total traffic and a 11% increase in HDVs on this link. The increase in HDVs equates to only 5 vehicles across 24 hours. This volume of change on this link is not</p>	<p>n/a</p>

Road link	Context	Assessment (Scenario 3 and 4)	Assessment (Scenario 5 and 6)
		<p>considered to be a material change to the character of the link.</p> <p>Across all themes relevant to population and health, the effect is considered to be minor adverse in traffic terms.</p>	
<p>Link 48 - Green Lane (N of Boundary Way)</p>	<p>At present there is no footway present on this link as it located adjacent to Buncefield Terminal. However, based on observations there are limited observed pedestrian and cycle movements in this area at present.</p>	<p>Experiences an 80% reduction in total traffic and a 90% increase in HDVs on this link. This is because Green Lane north of Boundary Way is closed to through traffic but provides access to some commercial buildings within the site. The increase in HDVs equates to only 22 HDVs over 24 hours on an industrial road.</p> <p>Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.</p>	<p>n/a</p>
<p>Link 54 - Green Lane (S of Boundary Way)</p>	<p>There is a footway on the west of the link and a PRow crosses the link but without any formal crossing provision. However, based on observations there are limited observed pedestrian and cycle movements in this area at present.</p> <p>This link includes a new signalised crossing of the PRow to reduce the current conflicts.</p>	<p>Experiences a 33% increase in total traffic and a 63% increase in HDVs on this link.</p> <p>Due to the new signalised crossing proposed, this will have a beneficial effect on NMU amenity and delay.</p> <p>Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.</p>	<p>Experiences a 46% increase in total traffic and a 64% increase in HDVs on this link.</p> <p>Due to the new signalised crossing proposed, this will have a beneficial effect on NMU amenity and delay.</p> <p>Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.</p>
<p>Link 55 - High Street</p>	<p>Runs through Hemel old town and has shops/restaurants on both sides and is a historic street. There are pedestrians and cyclists present and the road is one way only.</p>	<p>n/a</p>	<p>Experiences a 17% increase in HDVs. The increase in HDVs equates to only 2 vehicles across 24 hours.</p> <p>Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.</p>
<p>Link 97 - A4147 Leverstock Green Way</p>	<p>The A4147 Leverstock Green Way is an A road and is signed to be 30 mph through this area around Leverstock Green Village Centre. It provides a route between Hemel Hempstead and St Albans. It includes footpaths on both sides which are in wide and of good quality. Along the length of the link signalised pedestrian crossings are provided in key locations.</p>	<p>Experiences a 22% increase in total traffic and a 21% increase in HDVs on this link. The change in traffic on the A4147 Leverstock Green is largely as a result of the closure of Green Lane connection to A414 which was in response to local feedback from consultation events.</p> <p>Across all themes relevant to population and health, the effect is considered to be minor adverse in traffic terms.</p>	<p>Experiences a 18% increase in total traffic and a 17% increase in HDVs on this link. The change in traffic on the A4147 Leverstock Green is largely as a result of the closure of Green Lane connection to A414 which was in response to local feedback from consultation events.</p> <p>For severance and NMU delay, the effect is considered to be minor in traffic terms. For NMU amenity, and fear and intimidation, the effect is considered to be negligible in traffic terms.</p>

Road link	Context	Assessment (Scenario 3 and 4)	Assessment (Scenario 5 and 6)
Link 104 - A4147 Hemel Hempstead Road	<p>Has no footway/cycleways at present along its length. This volume of change on this link is not considered to be a material change to the character of the link.</p> <p>A shared footway / cycleway has been proposed along the north of the route to ensure any desire lines are accommodated safely and to promote sustainable travel. This will further reduce any effects on pedestrians/cyclists on this link.</p>	<p>Experiences a 16% increase in total traffic and a 84% increase in HDVs on this link. The increase in HDVs equates to less than 75 vehicles across 24 hours which equates to 3 per hour on an A road which is not considered to be materially different.</p> <p>Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.</p>	<p>Experiences a 17% increase in total traffic and a 33% increase in HDVs on this link.</p> <p>Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.</p>
Link 107 - A414 SB (S of J8)	<p>Has no footway/cycleways.</p>	<p>Experiences a 19% increase in total traffic and a 35% increase in HDVs on this link.</p> <p>Taking into account the context, this volume of change on this link which connects to the M1 is not considered to be a material change to the character of the link, which is strategic in nature.</p> <p>Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.</p>	<p>Experiences a 19% increase in total traffic and a 33% increase in HDVs on this link.</p> <p>Taking into account the context, this volume of change on this link which connects to the M1 is not considered to be a material change to the character of the link, which is strategic in nature.</p> <p>Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.</p>
Link 108 - A414 NB Offslip of J8	<p>To the south of the link there is a footway setback behind a large verge and a crossing to the north of the link at the traffic lights. Limited demand from pedestrians/cyclists have been observed on the footway and crossing.</p>	<p>Experiences a 19% increase in total traffic and a 30% increase in HDVs on this link.</p> <p>Taking into account the context, this volume of change on this link which connects to the M1 is not considered to be a material change to the character of the link, which is strategic in nature.</p> <p>Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.</p>	<p>Experiences a 20% increase in total traffic and a 33% increase in HDVs on this link.</p> <p>Taking into account the context, this volume of change on this link which connects to the M1 is not considered to be a material change to the character of the link, which is strategic in nature.</p> <p>Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.</p>
Link 110 - A414 NB Onslip of J8	<p>Has no footway/cycleways and is part of M1 J8.</p>	<p>Experiences a 14% increase in total traffic and a 41% increase in HDVs on this link.</p> <p>Taking into account the context, this volume of change on this link which connects to the M1 is not considered to be a material change to the character of the link, which is strategic in nature.</p> <p>Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.</p>	<p>Experiences a 13% increase in total traffic and a 34% increase in HDVs on this link.</p> <p>Taking into account the context, this volume of change on this link which connects to the M1 is not considered to be a material change to the character of the link, which is strategic in nature.</p> <p>Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.</p>

Road link	Context	Assessment (Scenario 3 and 4)	Assessment (Scenario 5 and 6)
Link 117 - A414 to M1 SB Onslip of J8	Has no footway/cycleways and is part of M1 J8.	Experiences a 27% increase in total traffic and a 67% increase in HDVs on this link. Taking into account the context, this volume of change on this link which connects to the M1 is not considered to be a material change to the character of the link, which is strategic in nature. Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.	Experiences a 28% increase in total traffic and a 60% increase in HDVs on this link. Taking into account the context, this volume of change on this link which connects to the M1 is not considered to be a material change to the character of the link, which is strategic in nature. Across all themes relevant to population and health, the effect is considered to be negligible in traffic terms.
Link 123 - A4147 Leverstock Green Way	The A4147 Leverstock Green Way is an A road and is signed to be 30 mph through this area around Leverstock Green Village Centre. It provides a route between Hemel Hempstead and St Albans. It includes footpaths on both sides which are in wide and of good quality. Along the length of the link signalised pedestrian crossings are provided in key locations.	Experiences a 20% increase in total traffic and a 29% increase in HDVs on this link. The change in traffic on the A4147 Leverstock Green is largely as a result of the closure of Green Lane connection to A414 which was in response to local feedback from consultation events. Across all themes relevant to population and health, the effect is considered to be minor adverse in traffic terms.	Experiences a 28% increase in total traffic and a 21% increase in HDVs on this link. The change in traffic on the A4147 Leverstock Green is largely as a result of the closure of Green Lane connection to A414 which was in response to local feedback from consultation events. Across all themes relevant to population and health, the effect is considered to be minor adverse in traffic terms.

17.4.28 In summary, for all road links assessed, the themes relevant to population and health are assessed as experiencing effects which are either negligible or minor in traffic terms.

17.4.29 On this basis, the magnitude of impact is considered to be low. In the context of a low sensitivity receptor, the resultant effect would be minor adverse (not significant).

Health effects from changes in socio-economic factors

17.4.30 The Development will include a significant quantum of commercial Class E (Class E (a,b,c,d,e,f) and Sui Generis floorspace, as well as community uses (Class F2) and other social infrastructure.

17.4.31 As outlined in Chapter 16: Socio-economics, and accounting for leakage/displacement for the Local Centre, the Development will result in the generation of between 301 and 342 net additional direct, indirect and induced long-term FTE jobs, of which 14 to 15 of which would be in the wider economy. This translates to an increase of +1.3% FTEs in the local impact area and +0.5% when considered in the context of Hertfordshire.

17.4.32 Gross value added (GVA) is used to measure the contribution to the economy of economic activity associated with the Development. The GVA associated with the net employment opportunities outlined above would be between £10.5 million and £11.9 million per annum.

17.4.33 The Development will also deliver a Central Commercial Area of office (Class E(g)(i)), R&D (E(g)(ii)), mixed industrial use (Class B2/E(g)(iii)) and distribution (Class B8) space. Taking into account leakage and displacement, the Employment Area should deliver between 1,835 and 2,070 net additional direct, indirect and induced long term FTE jobs in the local area, of which 167 to 188 would be in the wider economy. This translates to an increase of +7.6% FTEs in the local impact area and +3.3% when considered in the context of Hertfordshire. This, in turn, should support £131.7 million to £158.5 million net additional GVA each year.

17.4.34 In addition, new residents of the Development will contribute to the local economy through additional expenditure on convenience goods, comparison goods and services. After adjusting for leakage/displacement, it is estimated that the Development could generate around £24 million in net additional direct household expenditure each year for the local area. This represents 0.9% of the £2.8 billion local impact area, and 0.5% of the £5.1 billion St Albans' economy.

17.4.35 On the above basis, considering the net number of employment opportunities provided by the Development and due to the long-term and permanent nature of these opportunities, and associated contribution to the local economy, there is likely to be a small measurable impact on health and quality of life at the population-level. As such, the magnitude of impact is considered to be medium. In the context of a low sensitivity receptor, the resultant effect would be minor beneficial (not significant).

Health effects from changes in air quality

17.4.36 Chapter 11: Air Quality considers the potential impacts on local air quality (NO₂ and PM) from operational traffic associated with the Development in 2028 (first year of occupation) and 2035 (as all new cars and vans must be zero emissions by 2035). By the end of 2028, it is anticipated that only 3% of the residential development will be constructed and available to occupy, and 31% of all other uses will be constructed and able to operate. By the end of 2035, 40% of the residential development will be constructed and available to occupy, and 97% of all other uses will be constructed and able to operate.

17.4.37 For the assessment year of 2028, the results show that for changes in local air quality (NO₂ and PM), the majority of receptors analysed would not experience annual mean air quality concentrations which exceed the relevant objective thresholds which are set to be protective of the environment and human health.

17.4.38 The exception to this is receptor 113, which exceeds the objective threshold for NO₂. It should be noted that this exceedance exists with and without the Development, and for context, the receptor is situated between three heavily trafficked roads (the M1, the A414 and the A4147). The impacts on receptor 113 are summarised as follows:

- NO₂: baseline of 45.84 µg/m³, total with development of 47.42 µg/m³, increase of 1.58 µg/m³;
- PM₁₀: baseline of 35.65 µg/m³, total with development of 36.67 µg/m³, increase of 1.03 µg/m³; and
- PM_{2.5}: baseline of 19.02 µg/m³, total with development of 19.61 µg/m³, increase of 0.59 µg/m³.

17.4.39 From a human health perspective, the impacts on health outcomes are associated with the change in annual mean concentration rather than whether it is above or below a certain threshold. The maximum and average changes in annual mean concentrations in 2028 for NO₂ and PM are summarised as follows:

- NO₂: maximum change of 2.12 µg/m³ and average change of 0.36 µg/m³;
- PM₁₀: maximum change of 1.21 µg/m³ and average change of 0.18 µg/m³; and
- PM_{2.5}: maximum change of 0.64 µg/m³ and average change of 0.10 µg/m³.

17.4.40 For the assessment year of 2035, the results show that for changes in local air quality (NO₂ and PM), no receptors analysed would experience annual mean air quality concentrations which exceed the relevant objective thresholds which are set to be protective of the environment and human health. The maximum and average changes in annual mean concentrations in 2028 for NO₂ and PM are summarised as follows:

- NO₂: maximum change of 0.88 µg/m³ and average change of 0.14 µg/m³;
- PM₁₀: maximum change of 1.12 µg/m³ and average change of 0.17 µg/m³; and
- PM_{2.5}: maximum change of 0.60 µg/m³ and average change of 0.09 µg/m³.

17.4.41 The site suitability assessment provided in Chapter 11: Air Quality focusses on the air quality environment across the Site for future occupants. The results show that annual mean concentrations 50m away from the M1 for NO₂, PM₁₀ and PM_{2.5} are 34.08 µg/m³, 13.61 µg/m³ and 26.03 µg/m³, respectively. As a result, it is recommended that no units are built within 50m of the M1 to safeguard the health and wellbeing of future occupants.

17.4.42 The above changes remain orders of magnitude lower than is required to quantify any adverse change to health outcomes at the population-level. As a result, the magnitude of impact is considered to be negligible. In the context of a low sensitivity receptor, the resultant effect would be insignificant (not significant).

Health effects from changes in noise exposure

17.4.43 As outlined in Chapter 12: Noise and Vibration, there is potential for changes in noise exposure from operational road traffic, and mechanical plant and equipment.

17.4.44 Considering only road links with residential receptors, the worst-case change in noise exposure from operational road traffic is estimated to be 1.3 dB, occurring on Road Link #19 'B487 Hemel Hempstead Road'. It should be noted that these changes in noise levels are predicted from the roadside, rather than at the façade of residential receptors. On this basis, it is reasonable to assume that the internal impact at residential receptors would be lower than this and are unlikely to be perceptible or cause any material impact on daytime annoyance or sleep disturbance.

17.4.45 Regarding operational mechanical plant and equipment, at this outline planning stage, the location, type and operational periods of any mechanical plant or other noise generating activity that may be installed/undertaken is not known. As such it is not possible to undertake a detailed assessment of operational mechanical plant and equipment. While this is the case, as stated in Chapter 12: Noise and Vibration, any mechanical plant or equipment

that may be included as part of the Development will be attenuated such that the Rating Level does not exceed the representative background sound level over the plant operational period, the resultant impact of which would be negligible in noise terms.

17.4.46 The site suitability assessment provided in Chapter 14: Noise and Vibration takes into account mitigation in the form of a noise bund and barrier that will be formed along the majority of the eastern boundary of the Site with the M1 motorway. Furthermore, areas of proposed residential use would be located as far from the motorway as practicable and with gardens orientated away from the motorway. The results show that following the implementation this mitigation, satisfactory internal and external acoustic environments would be achieved which are protective of human health and wellbeing.

17.4.47 On the above basis, the magnitude of impact is considered to be negligible. In the context of a low sensitivity receptor, the resultant effect would be insignificant (not significant).

Health effects from changes in demand for local primary healthcare

17.4.48 As outlined in Chapter 16: Socio-economics, the 'maximum' population yield from the indicative housing mix would increase the number of patients in GP practices within 1.6 km of the Site by 9,514 (from 25,295 to 34,809). This represents an increase of approximately +38% and shifts the patient to GP ratio from around 2,168 (baseline) to 2,983.

17.4.49 Whilst this is the case, the Development will include at least one health centre (incorporating GP services) within a local centre. Allowance has been made for at least 1,640 sqm GIA of 'medical service' floorspace (Class E(E)) within the application.

17.4.50 Based on the average number of GPs per surgery at a national level (i.e. 4.6), this will change the patient to GP ratio in the LIA to 2,139 which is lower than the baseline position of 2,168 patients per GP and therefore represents an improvement in healthcare capacity locally. In reality, the health centre provided may accommodate more GPs than the national average.

17.4.51 On this basis, the magnitude of impact is considered to be low. In the context of a low sensitivity receptor, the resultant effect would be minor beneficial (not significant).

17.5 Additional Mitigation / Enhancement and Likely Residual Effects of the Development and their Significance

17.5.1 On the basis that no significant adverse effects have been predicted, no further health-specific mitigation is considered to be required. As no further health-specific mitigation is proposed, the residual effects remain the same as reported in Section 17.4.

17.6 Likely Residual Cumulative Effects and their Significance

- 17.6.1 There is potential for cumulative changes in emissions to air and noise, and consequential cumulative human health effects, where construction works are ongoing concurrently in close proximity to one another (within 500 m). While this is the case, it is expected that other construction sites within close proximity to the Development would adhere to the same level of mitigation and good practice, which are typically required through the planning and, where applicable, EIA process for major developments, limiting the potential for cumulative impacts. On this basis, cumulative effects on human health are expected to be not significant.
- 17.6.2 The cumulative effect of changes in transport nature and flow rate during construction and operation (including consequential impacts on air quality and noise) have been considered within the main assessment by including cumulative development flows in all modelling undertaken. Therefore, the human health effects reported in relation to changes in transport nature and flow rate, noise emissions and air quality emissions during operation remain as not significant.

17.7 Conclusions

- 17.7.1 The construction phase would generate on-site and off-site employment opportunities and associated income over a 17-year period, which are key wider determinants of good health and wellbeing. This would have beneficial impacts to individuals but is unlikely to materially affect health to the extent that there would be a measurable impact at the population level.
- 17.7.2 Environmental determinants of health that are considered include changes in transport nature/flow rate, air quality and noise exposure. While the direction of these impacts would be adverse in nature, they would be temporary and are not considered to be of a level that would have any material impacts on human health or wellbeing.
- 17.7.3 Diversions to a small number of affected PRoW would be managed by temporary diversions, resulting in no impacts on access for engaging in recreation and physical activity. Construction related traffic would temporarily alter the traffic nature and flow rate on seven road links. While this is the case, no change to the character on any road link is anticipated, and there would be no material impact on human health or wellbeing as a result.
- 17.7.4 Once operational, the main impact on environmental determinants (air quality and noise) is associated with traffic generated by future occupants and visitors to the Site, along with the impacts of the traffic itself on factors such as severance, non-motorised user delay and amenity, fear and intimidation, and risk of accidents and injury.
- 17.7.5 For all scenarios analysed, which includes predicted traffic generation from other developments currently seeking planning permission, there would be no significant impacts from traffic generation on severance, non-motorised user delay and amenity, fear and intimidation, and risk of accidents and injury. The associated impacts on air quality and noise are also expected to be minimal and would not be of a level that would result in measurable health or wellbeing impacts at the population level.

- 17.7.6 Site suitability has also been considered in the context of air quality and noise, whereby the main sources of external environmental impacts are those from the M1. Mitigation measures are applied to ensure the internal and external noise environment is protective of human health. Furthermore, it is considered that as long as residential units are located at least 50m from the M1, the air quality environment would also be below the objective thresholds which are set to be protective of the environment and human health.
- 17.7.7 Due to the presence of two local centres, there would be long-term and permanent employment and associated income generated by the Development. Furthermore, there would be benefits to the local economy from resident spending. This would result in small and measurable beneficial impacts to health and wellbeing at the population level.
- 17.7.8 The local centres would also include the delivery of at least one health centre, incorporating GP services. Allowance has been made for at least 1,640 sqm GIA of 'medical service' floorspace which would improve existing primary healthcare capacity locally.
- 17.7.9 In addition, the operation phase would see the delivery of a walkable and cyclable neighbourhood which facilitates the uptake of physical activity through using modes of active transport. This would have a beneficial impact on population health.