M3 Junction 9 Improvement

Scheme Number: TR010055

6.1 Environmental Statement Chapter 12 Population and Human Health (Rev 1) Tracked

APFP Regulations 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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M3 Junction 9 Improvement
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6.1 ENVIRONMENTAL STATEMENT - CHAPTER 12: POPULATION AND HUMAN HEALTH

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12 Population and Human Health

12.1 Introduction

12.1.1 This chapter presents the findings of the assessment of the M3 Junction 9 Improvement Scheme (hereafter referred to as the Scheme) on population and human health. This chapter outlines legislation, policy framework and guidance, describes the assessment methodology, study area, baseline conditions, an overview of potential impacts, mitigation measures, likely residual effects, monitoring and a summary. This chapter has been prepared by a competent expert and further details are provided in **Appendix 1.1 (Competent Expert Evidence)** of the **ES (Document Reference 6.3).**

12.1.2 This chapter should be read in conjunction with **Figures 12.1 to 12.6** of the **Environmental Statement (ES) (Document Reference 6.2)** and **Appendix 12.1 (Schedule of Population and Human Health Effects)** of the **ES (Document Reference 6.3).**

12.1.3 This chapter should be read in parallel with **Chapter 5 (Air Quality), Chapter 7 (Landscape and Visual), Chapter 9 (Geology and Soils), Chapter 11 (Noise and Vibration), Chapter 13 (Road Drainage and the Water Environment), Chapter 14 (Climate)** and **Chapter 15 (Cumulative Effects)** of the **ES (Document Reference 6.1)**.

12.2 Consultation

12.2.1 Consultation and engagement has informed the population and human health assessment. Comments and responses to the Scoping Opinion received in November 2020 are provided in **Appendix 4.2 (Scoping Comments and Responses)** of the **ES (Document Reference 6.3)** and comments and responses received during statutory consultation between May and June 2021 are provided in **Appendix K** of the **Consultation Report (Document Reference 5.1)**. The Section 42 Consultation Comments and Responses sets out the consultation undertaken with the Agricultural Land Holdings directly impacted by the Scheme, as well as local businesses, community groups including cycling and rambling groups, and Parish Councils. Other relevant stakeholders including the Health and Safety Executive and Office for Health Improvement and Disparities, 'OHID', (formerly known as Public Health England).

12.2.2 **Table 12.1** summarises other relevant consultation / engagement undertaken together with a response.

Table 12.1: Consultation undertaken relevant to population and human health

Reference	Comment	Response
Winchester City Council– Strategic Planning, Economic Development	Reinforcement of Winnall being the key employment area in Winchester.	As a key location for employment and economic development, Winnall Industrial Estate is included as a receptor and assessed within **Section 12.10** of this chapter.
	A low employment rate but we assume this correctly reproduces ONS data? The subsequent pay info looks consistent with our Employment Study.	The most up to date Office for National Statistics (ONS) employment baseline (2020) has been used in this chapter.
	Winnall described as *3 areas, but it would be better to use the 4 subdivisions set out in Local Plan Part 2 policy WIN11, so as to reflect statutory plan policy.*	Winnall baseline description has been reported in Section 12.4 of this ES Chapter.
	The adopted Local Plan target (2011-2031) is 12,500 dwellings	Adopted Local Plan target of 12,500 dwellings is used throughout this ES Chapter.
	refer to 'Winchester Town', not 'Winchester City Centre'.	References in the ES Chapter refer to the correct terminology.
	We are now planning to consult on a 'Strategic Issues & Priorities' document in Feb/March 2021	The "Strategic Issues and Options" paper published for consultation in early 2021 has been considered within this ES Chapter.
	North Whiteley is within the WCC area	Reference to North Whiteley within Winchester City Council area used in this ES Chapter.
	A good idea to mention the Green Economic Development Strategy and to be conscious that the Council has declared a climate emergency which any plans for Winnall or the improvement of J9 would need to take into account.	The Green Economic Development Strategy has been discussed in the planning policy section of **The Case for the Scheme** (**Document Reference 7.1**).

12.3 Legislative, policy framework and guidance

12.3.1 This assessment has been undertaken considering current legislation, together with national, regional and local plans and policies. A list is provided below and

further detail can be found in the **Planning Statement and National Policy Statement for National Networks (NPS NN) Accordance Table (Document Reference 7.2)**:

- Localism Act 2011
- The Commons Registration Act 1965
- The Countryside and Rights of Way Act 2000
- The National Parks and Access to the Countryside 1949
- The Health and Social Care Act 2012
- National Policy Statement for National Networks (2014)
- National Planning Policy Framework (2019)
- Planning Practice Guidance (PPG) (online resource)
- Road Investment Strategy 2: 2020 to 2025 (2020)
- Winchester District Local Plan Part 1 – Joint Core Strategy (2013)
- Winchester District Local Plan Part 2 – Development Management and Site Allocations (2017)
- South Downs Local Plan (2019)
- Winchester District Draft Local Plan 2018 - 2038 (emerging)
- Winnall Planning Framework (2015)
- National Highways Cycling Strategy (2016)
- National Highways Accessibility Strategy (2016)

12.3.2 In addition to the legislation and national and local planning policies listed above, this assessment has also been carried out in accordance with the following professional standards and guidance:

- DMRB LA 104 Environmental assessment and monitoring (National Highways, 2020)
- DMRB LA 112 Population and human health (National Highways, 2020)
- Health in Environmental Impact Assessment – A Primer for a Proportionate Approach (Institute of Environmental Management and Assessment, 2017)
- Addressing Human Health in Environmental Impact Assessment – Consultation Draft (International Association for Impact Assessment, 2019)

12.4 Assessment methodology

Scope of the assessment for land use and accessibility

12.4.1 In accordance with DMRB LA 112 (National Highways, 2020), this chapter presents an assessment of impacts on land use and accessibility on the following matters during the construction and operation of the Scheme:

- private property and housing – land, buildings and infrastructure for the purpose of residential use
- community land and assets – land, buildings and infrastructure providing a service/resource to a community, e.g. open spaces, village greens, village halls, healthcare and education facilities etc.
- development land and businesses – land identified in national or local plans, policies or strategies for development (including intensification of existing uses) and land subject to planning permission, and land and buildings for the purpose of commercial/industrial enterprise.
- agricultural land holdings – land and associated infrastructure for the purpose of agricultural production, e.g. arable farming, dairy farming etc.
- walkers, cyclists and horse-riders – routes and paths used by walkers, cyclists and horse-riders.

Study area for land use and accessibility

12.4.2 DMRB LA 112 (National Highways, 2020) states that the study area for land use and accessibility:

"*shall be based on the construction footprint/ project boundary (including compounds and temporary land take) plus a 500m area surrounding the project boundary.*

Where likely effects are identified outside the 500m area surrounding the project boundary, the study area should be extended accordingly.

Where effects are unlikely to occur within the 500m area surrounding the project boundary, the study area should be reduced accordingly."

12.4.3 As outlined in the 2020 Scoping Report, consideration has therefore been given to the broad types of effects likely to occur from the Scheme (both direct and indirect).

12.4.4 The 2020 Scoping Opinion states:

"*The proposed study area is up to 2km from the red line boundary of the Proposed Development*. *Public Health England highlight that the usual walking commute is approximately 2miles and cycling commute up to 3miles therefore*

the study area does not appear appropriate. The ES should fully justify the study area based on the ZoI".

12.4.5 It is therefore proposed that the study area for walking and cycling is a 5 km area around the Scheme to consider the wider network of Public Rights of Way (PRoW). **Table 12.2** summarises the study areas for the five elements within the land use and accessibility assessment as identified by DMRB LA 112 (National Highways, 2020).

Table 12.2: Land use and accessibility study area

Land Use and Accessibility Element	Study area for direct effects	Study area for indirect effects
Private property and housing	Within the Application Boundary	Within 500m of the Application Boundary
Community land and assets	Within the Application Boundary	Within 500m of the Application Boundary
Development land and businesses	Within the Application Boundary	Within 500m of the Application Boundary
Agricultural land holdings	Within the Application Boundary	Within 500m of the Application Boundary
Walkers, cyclists and horse riders	Within the Application Boundary	Within 5km of the Application Boundary

Baseline approach for land use and accessibility

12.4.6 The process for developing the land use and accessibility baseline comprises the following phases:

- Data collection (commencing at the screening/scoping stage and developed with greater detail if further assessment is required)
- Spatial data mapping
- Consultation (where required to inform assessment conclusions)

12.4.7 The indicative types of data to be collected to form the baseline for land use and accessibility comprises:

- Private property and housing:

- The location and number of properties at risk of demolition, or from which land would be required/access affected by a project
- The location of residential development land and number of units that would be affected by a project

- Community land and assets:
  - The location of community land (e.g. common land, village greens, open green space, allotments, sports pitches etc) and amount of land which would be required/access affected by a project
  - The location of community assets (e.g. village halls, healthcare facilities, education facilities, religious facilities etc) and number of assets from which land would be required/access affected by a project
  - The level of existing accessibility restrictions/severance to community land and assets within the study area
  - The frequency of use of community land and assets within the study area.
- Development land and businesses:
  - The location and number of businesses (and associated jobs) at risk or from which land would be required/access affected by a project
  - The location of land allocated for development by local authorities and the number of future jobs that would be affected by a project
  - Land not allocated by local authorities which is subject to planning application(s) supporting future jobs
  - The level of existing accessibility restrictions/severance to development land and businesses within the study area
- Agricultural land holdings:
  - The type, location and number of agricultural holdings at risk of demolition or from which land would be required/access affected by a project
  - The level of existing severance/accessibility restrictions to agricultural land holdings within the study area
  - The frequency of use of the agricultural holdings/assets within the study area
- Walking, cycling and horse-riding:

- The type, location and extent of walking, cycling and horse-riding provision (e.g. public rights of way) within the study area
- The frequency of use of the walking, cycling and horse-riding provision within the study area

12.4.8 The following activities have been undertaken to complete a proportionate assessment of likely significant effects from the Scheme on identified population and health receptors:

- Review of relevant legislation and planning policies
- Establishment of baseline conditions within the relevant study areas to identify potential receptors and receptor groupings for consideration in the assessment
- Definition of receptor sensitivity to likely changes (e.g., land use or community severance) resulting from the Scheme
- Examination of likely population and human health changes from the Scheme on identified receptors and receptor groupings, with consideration given to the phasing, magnitude, duration (e.g., short/long term, temporary/permanent) and nature (i.e., adverse/beneficial) of the change
- Consideration of likely cumulative population and health changes from the Scheme in combination with other identified approved developments
- Identification of mitigation measures to address any likely adverse population and health effects
- Identification of likely residual population and health effects from the Scheme taking account of all mitigation measures

Information sources, modelling, and approach for land use and accessibility

12.4.9 A review of other application documents including the **Book of Reference (Document Reference 4.3)**, **Consultation Report (Document Reference 5.1)** and other chapters within this **Environmental Statement (Document Reference 6.1)** was undertaken to identify the relevant land use and accessibility receptors within the study area.

12.4.10 Office for National Statistics (ONS) datasets have been reviewed, including the Mid-year Population Estimates.

12.4.11 A site familiarisation visit was undertaken in September 2020 to inform the environmental assessment work, which verified the characteristics of identified receptors including key economic areas (e.g., Winnall Industrial Estate), public access routes and community infrastructure assets within the assessed study areas.

12.4.12 Relevant WebTAG and traffic model outputs within the **Transport Assessment Report** (**Document Reference 7.13**) have been used to identify changes in accessibility resulting from the Scheme, which informed the full assessment of likely significant population and health effects as reported in **Section 12.9** of this ES chapter.

Approach to design, mitigation and enhancement measures

12.4.13 The Scheme has implemented the following mitigation hierarchy in accordance with DMRB LA 112 (Highways England, 2020):

1) Avoidance and prevention:

   - Identify alternative design/route options that avoid the requirement to compulsory purchase property, land and assets; and
   - Identify alternative design/route options that avoid introducing or worsening severance and avoid reducing walking, cycling and horse-riding provision/increasing journey times.

2) Reduction:

   - Minimise impacts on property, land and assets by selecting route alignments that avoid land take from the most sensitive receptors/aspects of receptors thereby maintaining viability; and
   - By altering alignment to minimise severance to communities and disruption to walking, cycling and horse-riding provision.

3) Remediation: where it is not possible to avoid or reduce a significant adverse effect, provide equivalent facilities as close to the original location as possible.

12.4.14 Embedded mitigation is listed within **Section 12.8** and **Chapter 4 (Environmental Assessment Methodology)** of the **ES (Document Reference 6.1)**.

12.4.15 Embedded relevant to population and human health and essential mitigation measures are identified and are outlined in **Section 12.9**. This mitigation is also included within the **first iteration Environmental Management Plan (fiEMP) (Document Reference 7.3)**.

Environmental value (sensitivity) and descriptions for land use and accessibility

12.4.16 DMRB LA 112 (Highways England, 2020) sets out definitions for receptor sensitivity for use within impact assessments. From this,

~~12.4.16~~ **Table 12.3**

12.4.17 ~~**Table 12.3**~~ below identifies the definitions of receptors and magnitude of change relating to the Scheme where it is considered there is a likelihood for significant effects and further assessment is required.

Table 12.3: Receptor sensitivity for land use and accessibility

Receptor value (sensitivity)	Description
Very High	**Private property and housing:** ■ existing private property or land allocated for housing in a local authority area where the number of households are expected to increase by >25% by 2041 (ONS data); and/or ■ existing housing and land allocated for housing (e.g., strategic housing sites) covering >5ha and / or >150 houses. **Community land and assets where there is a combination of the following:** ■ complete severance between communities and their land/assets, with little/no accessibility provision; ■ alternatives are only available outside the local planning authority area; ■ the level of use is very frequent (daily); and ■ the land and assets are used by the majority (>=50%) of the community. **Development land and businesses:** ■ existing employment sites (excluding agriculture) and land allocated for employment (e.g., strategic employment sites) covering >5ha. **Agricultural land holdings:** ■ areas of land in which the enterprise is wholly reliant on the spatial relationship of land to key agricultural infrastructure; and ■ access between land and key agricultural infrastructure is required on a frequent basis (daily). **Walkers, cyclists, and horse-riders (WCH):** ■ national trails and routes likely to be used for both commuting and recreation that record frequent (daily) use. Such routes connect communities with employment land

Receptor value (sensitivity)	Description
	uses and other services with a direct and convenient WCH route. Little / no potential for substitution. ■ routes regularly used by vulnerable travellers such as the elderly, school children and people with disabilities, who could be disproportionately affected by small changes in the baseline due to potentially different needs. ■ rights of way for WCH crossing roads at grade with >16,000 vehicles per day.
High	**Private property and housing:** ■ private property or land allocated for housing located in a local planning authority area where the number of households are expected to increase by 16-25% by 2041 (ONS data); and/or ■ existing housing and land allocated for housing (e.g., strategic housing sites) covering >1-5ha and / or >30-150 houses. **Community land and assets where there is a combination of the following:** ■ there is substantial severance between community and assets, with limited accessibility provision; ■ alternative facilities are only available in the wider local planning authority area; ■ the level of use is frequent (weekly); and ■ the land and assets are used by the majority (>=50%) of the community. **Development land and businesses:** ■ existing employment sites (excluding agriculture) and land allocated for employment (e.g., strategic employment sites) covering >1 - 5ha. **Agricultural land holdings:** ■ areas of land in which the enterprise is wholly reliant on the spatial relationship of land to key agricultural infrastructure; and

Receptor value (sensitivity)	Description
	■ access between land and key agricultural infrastructure is required on a frequent basis (weekly). **WCH:** ■ regional trails and routes (e.g., promoted circular walks) likely to be used for recreation and to a lesser extent commuting, that record frequent (daily) use. Limited potential for substitution; and/or ■ rights of way for WCH crossing roads at grade with >8,000 - 16,000 vehicles per day.
Medium	**Private property and housing:** ■ houses or land allocated for housing located in a local authority area where the number of households are expected to increase by >6-15% by 2041 (ONS data); and/or ■ existing housing and land allocated for housing (e.g., strategic housing sites) covering <1ha and / or <30 houses. **Community land and assets where there is a combination of the following:** ■ there is severance between communities and their land/assets but with existing accessibility provision; ■ limited alternative facilities are available at a local level within adjacent communities; ■ the level of use is reasonably frequent (monthly); and ■ the land and assets are used by the majority (>=50%) of the community. **Development land and businesses:** ■ existing employment sites (excluding agriculture) and land allocated for employment (e.g., strategic employment sites) covering <1ha. **Agricultural land holdings:** ■ areas of land in which the enterprise is partially dependent on the spatial relationship of land to key agricultural infrastructure; and

Receptor value (sensitivity)	Description
	■ access between land and key agricultural infrastructure is required on a reasonably frequent basis (monthly). **WCH:** ■ public rights of way and other routes close to communities which are used for recreational purposes (e.g., dog walking), but for which alternative routes can be taken. These routes are likely to link to a wider network of routes to provide options for longer, recreational journeys ■ rights of way for WCH crossing roads at grade with >4000 - 8000 vehicles per day.
Low	**Private property and housing:** ■ proposed development on unallocated sites providing housing with planning permission/in the planning process. **Community land and assets where there is a combination of the following:** ■ limited existing severance between community and assets, with existing full Disability Discrimination Act (DDA) DDA 1995 compliant accessibility provision; ■ alternative facilities are available at a local level within the wider community; ■ the level of use is infrequent (monthly or less frequent); and ■ the land and assets are used by the minority (>=50%) of the community. **Development land and businesses:** ■ proposed development on unallocated sites providing employment with planning permission/in the planning process. **Agricultural land holdings:** ■ areas of land which the enterprise is not dependent on the spatial relationship of land to key agricultural infrastructure; and ■ access between land and key agricultural infrastructure is required on an infrequent basis (monthly or less frequent).

Receptor value (sensitivity)	Description
	WCH: ■ routes which have fallen into disuse through past severance, or which are scarcely used because they do not currently offer a meaningful route for either utility or recreational purposes, and/or ■ rights of way for WCH crossing roads at grade with <4000 vehicles per day.
Negligible	**Private property and housing:** N/A. **Community land and assets where there is a combination of the following:** ■ no or limited severance or accessibility issues; ■ alternative facilities are available within the same community; ■ the level of use is very infrequent (a few occasions yearly); and ■ the land and assets are used by the minority (>=50%) of the community. **Development land and businesses:** N/A. **Agricultural land holdings:** ■ areas of land which are infrequently used on a non-commercial basis. **WCH:** N/A.

Magnitude of impact for land use and accessibility

12.4.18 This chapter assigns a specific magnitude of change rating to each type of likely impact from the Scheme on each identified relevant receptors. As specified within DMRB LA 112 (Highways England, 2020), the definitions of magnitude of change set out in **Table 12**~~**Table 12**~~ below were adopted in this assessment. The magnitude of impact on population and human health is gauged by

estimating the amount of change on the receptor arising from a project using the criteria below.

Table 12.4: Magnitude of impact for land use and accessibility

Magnitude of impact (change)	Typical description
Major	**Private property and housing, community land and assets, development land and businesses and agricultural land holdings:** ■ loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements. e.g. direct acquisition and demolition of buildings and direct development of land to accommodate highway assets; and/or ■ introduction (adverse) or removal (beneficial) of complete severance with no/full accessibility provision. **WCH:** ■ >500m increase (adverse) / decrease (beneficial) in WCH journey length.
Moderate	**Private property and housing, community land and assets, development land and businesses and agricultural land holdings:** ■ partial loss of/damage to key characteristics, features or elements, e.g. partial removal or substantial amendment to access or acquisition of land compromising viability of property, businesses, community assets or agricultural holdings; and/or ■ introduction (adverse) or removal (beneficial) of severe severance with limited/moderate accessibility provision. **WCH:** ■ >250m - 500m increase (adverse) or decrease (beneficial) in WCH journey length.
Minor	**Private property and housing, community land and assets, development land and businesses and agricultural land holdings:** ■ a discernible change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements, e.g., amendment to access or acquisition of land resulting in changes to operating conditions that do not comprise overall viability of property, businesses, community assets or agricultural holdings; and/or

Magnitude of impact (change)	Typical description
	■ introduction (adverse) or removal (beneficial) of severance with adequate accessibility provision. **WCH:** ■ >50m - 250m increase (adverse) or decrease (beneficial) in WCH journey length.
Negligible	**Private property and housing, community land and assets, development land and businesses and agricultural land holdings:** ■ very minor loss or detrimental alteration to one or more characteristics, features or elements. e.g. acquisition of non-operational land or buildings not directly affecting the viability of property, businesses, community assets or agricultural holdings; and/or ■ very minor introduction (adverse) or removal (beneficial) of severance with ample accessibility provision **WCH:** ■ <50m increase (adverse) or decrease (beneficial) in WCH journey length.
No change	No loss or alteration of characteristics, features, elements or accessibility; no observable impact in either direction.

Land-use and accessibility assessment approach – significance of effect

12.4.19 The significance of effect is derived by combining the assigned value (sensitivity) of receptors with the magnitude of change arising from a project, in accordance with DMRB LA 104 (Highways England, 2020). This is achieved using professional judgement informed by the matrix (taken from DMRB LA 104 ((Highways England, 2020)) illustrated below in **Table 12.5**. Five levels of significance (very large, large, moderate, slight or neutral) are defined which apply equally to adverse and beneficial impacts. Where two significances of impacts are given in the table (for example neutral or slight) professional judgement is used in the text to suggest the most likely significance of effect in addition to the reasonable worst-case scenario.

12.4.20 The significance of effect shall be determined for each element of the land and accessibility subtopic (e.g. private property and housing, development land and businesses) affected by a project. It is noted that significant effects typically comprise effects after consideration of mitigation.

12.4.21 A significance of effect of moderate or above is taken to be significant in Environmental Impact Assessment (EIA) terms.

Table 12.5: Significance of effects for land use and accessibility

Environmental Value (sensitivity)	Magnitude of impact (degree of change)				
	No Change	**Negligible**	**Minor**	**Moderate**	**Major**
Very High	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate
Negligible[1]	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight

Assessment methodology for human health

12.4.22 This section sets out the scope of the human health assessment which reports on the following elements:

- health profiles of affected communities
- health determinants (e.g. noise or air pollution)
- likely health outcomes

12.4.23 The assessment approach has been qualitative except where informed by quantitative findings from other environmental factor assessments of the ES, including **Chapter 5 (Air Quality)**, **Chapter 9 (Geology and Soils)**, **Chapter 10 (Material Assets and Waste)**, **Chapter 11 (Noise and Vibration)**, **Chapter 13 (Road Drainage and the Water Environment)**, and **Chapter 14 (Climate)** of the **ES (Document Reference 6.1)**.

12.4.24 In accordance with DMRB LA 112 (Highways England, 2020), the following environmental conditions relevant to human health, including:

[1] Receptors identified as having negligible sensitivity (to likely effects) have no potential to experience significant effects from The Scheme and thus do not require further consideration in the assessment. To remain proportionate and support the assessment process, the baseline analysis presented in **Section 12.6** focuses on characterising potential receptors with higher than negligible sensitivity to likely changes due to The Scheme.

- Ambient air quality and Air Quality Management Areas (AQMA)
- Ambient noise and areas sensitive to noise (e.g. noise important areas (NIA), noise management areas (NMA))
- Sources of pollution (e.g. light, odour, contamination etc)
- Landscape amenity
- Severance/accessibility and the ability of communities to access community land, assets and employment

Study area for human health

12.4.25 The Study Area is defined as the Application Boundary, with consideration to the wards directly and indirectly affected by the Scheme. These are listed below and identified on **Figure 12.2 (Human Health Study Area)** of the **ES (Document Reference 6.2)**:

- Winchester District
- Alresford and Itchen Valley Ward
- St Bartholomew Ward
- St Michael Ward
- The Worthys Ward
- Upper Meon Valley Ward

Baseline data gathering for human health

12.4.26 The process for developing the health baseline is comprised of the following phases:

- Data collection (commencing at the screening/scoping stage and developed if further assessment is required)
- Spatial data mapping
- Consultation

12.4.27 In accordance with DMRB LA 112 (Highways England, 2020), the baseline health profiles of the communities within the study area have been established, including the following data:

- Percentage of community with increased susceptibility to health issues (vulnerable members e.g. 65)

- Percentage of community with pre-existing health issues (e.g. respiratory disease/chronic obstructive pulmonary disease (COPD))
- Deaths from respiratory diseases
- Percentage of community with long term illness or disability
- General health
- Life expectancy
- Income deprivation

12.4.28 The following sources of information have been used to develop the baseline characteristics:

- Hampshire County Council Joint Strategic Needs Assessment (JSNA) (2019)
- A Strategy for the Health and Wellbeing of Hampshire 2019-2024 (Hampshire County Council, 2019)
- Towards a Healthier Hampshire: A Strategy for Improving the Public's Health 2016-2021 (Hampshire County Council, 2016)
- Local Health Profiles (OHID, 2020)
- Office for National Statistics, NOMIS Census Data (NOMIS, 2011)
- 2021 Population Estimates (NOMIS, 2021)
- Annual Population Survey (ONS 2022a)
- Annual Survey of Hours and Earnings ONS (2022b)
- Relevant baseline from environmental assessments
- Outputs of public and stakeholder engagement

Determinants of human health

12.4.29 Social, environmental, and economic health determinants listed below have been used for the identification of health impacts relevant to construction and operation of the Scheme, in accordance with DMRB LA 112 (Highways England, 2020):

- The location and type of community, recreational and education facilities and severance/separation of communities from such facilities
- The location of green/open space and severance/separation of communities from such facilities

- The location of healthcare facilities and severance/separation of communities from such facilities
- Outline spatial characteristics of the transport network and usage in the area, including the surrounding road network, Public Rights of Way (including bridleways), cycle ways, non-designated public routes and public transport routes
- Air quality management areas and ambient air quality
- Areas recognised as being sensitive to noise (e.g. noise important areas, noise management areas) and the ambient noise environment
- Sources and pathways of potential pollution (e.g. land/water contamination)
- Landscape amenity
- Safety information associated with the existing affected road network (e.g. numbers of killed and seriously injured)
- Where available, information collated from stakeholder consultation

12.4.30 Where relevant, it has been noted within the assessment that changes in accessibility/severance for communities which influence health outcomes include (but are not limited to):

- A reduction or increase in access to open green space/recreational facilities;
- A reduction or increase in opportunities for Walking, Cycling and Horse-riding
- A reduction or increase in opportunities for accessing healthcare facilities

Assessing human health effects

12.4.31 In line with DMRB LA 112 (Highways England, 2020), a qualitative assessment of likely effects on the key determinants of health has been undertaken with reference to identified receptor groupings of relevant health determinants. An effect is deemed to be possible where there is a relevant source (aspect of the Scheme), pathway (route by which the source affects the receptor - causation) and receptor (recipient that can be affected by the source).

12.4.32 Qualitative judgement is needed where these factors are in place, to establish whether a significant effect is likely. This is related to the strength of the evidence base regarding causation, the magnitude of impact and the sensitivity of the receptors.

12.4.33 Whilst very localised issues may arise and require consideration, the key consideration with regard to significance is whether it is likely receptors would experience a change in health outcomes and whether this is likely to affect

'population health'[2], as population based conclusions are the appropriate level at which to consider effects for the purposes of EIA on human health (IAIA, 2019).

12.4.34 The following questions are relevant as noted below:

- Strength of evidence
  - What is the strength of evidence base linking the aspect of Scheme to health outcomes?
  - Have significant effects been identified in other assessments in the ES which are linked to human health (i.e. are environmental standards threatened)?
- Magnitude of impact
  - Is the effect at an individual or population level?
  - Is the impact linked to local public health priority objectives? (as identified through review of baseline sources)?
  - Is the impact reversible or irreversible?
  - Does the impact occur over the short (less than one year), medium (one to five years) or long (over five years) term?
  - Is the impact permanent or temporary?
  - Does the impact increase or decrease with time?
- Sensitivity of receptors
  - Are vulnerable groups (as identified for this assessment) likely to be affected?

12.4.35 The baseline studies in **Section 12.6** of this ES chapter identify broad vulnerable receptor groups who may be disproportionally affected by the Scheme (e.g. older people, children etc.). However, this ES chapter has not undertaken a systematic assessment of protected characteristics group defined through the Equalities Act (2010). This is covered within the **Equality Impact Assessment (Document Reference 7.14)** prepared for the Scheme.

12.4.36 Based on an understanding of the health profile of the communities within the study area (defined at the ward level and obtained through baseline data collection) a value is assigned to the sensitivity of the population/community to changes in any of the health determinants. The sensitivity of the population

[2] 'Population health' is defined as the health outcomes of a group of individuals, including the distribution of such outcomes within the group.

determined by whether vulnerable groups (as identified for this assessment in **Section 12.6**) are likely to be affected, and therefore reported as:

- Low
- Medium
- High

12.4.37 Vulnerable groups within the above receptor group were identified through the review of the population profiles of local communities set out in **Section 12.5** Study area. Where relevant, the assessment draws upon the findings of other ES chapters including **Chapter 5 (Air Quality)**, **Chapter 9 (Geology and Soils)**, **Chapter 10 (Material Assets and Waste)**, **Chapter 11 (Noise and Vibration)**, **Chapter 13 (Road Drainage and the Water Environment)**, and **Chapter 14 (Climate)** of the **ES (Document Reference 6.1)**. Changes to health determinants, as a result of the Scheme, in combination with the sensitivity of the population/community to these changes, would result in changes in health outcomes. These health outcomes are recorded as described in **Table 12.6**.

Table 12.6: Human health outcome categories

Human health outcomes	Typical description
Positive	A beneficial health impact is identified
Neutral	No discernible health impact is identified
Negative	An adverse health impact is identified
Uncertain	Where uncertainty exists as to the overall health impact

Reasonable worst-case parameters for assessment

12.4.38 An assessment has been conducted within the Limits of Deviation (LoD) outlined within **Chapter 2 (The Scheme and its Surroundings)** of the **ES (Document Reference 6.1)**. The vertical and lateral LoD for the Scheme have been reviewed with respect to sensitive receptors identified within this ES chapter. The vertical and lateral LoD would not affect the conclusions of the assessment reported in this chapter.

12.4.39 In addition, a wider study area has been considered where relevant. This includes within the assessment on walkers, cyclists and horse-riders, which considers a 5km study area to consider impacts on the wider PRoW network. The human health assessment also considers the local population at a ward level, which goes beyond the boundaries within the LoD.

Assessment assumptions and limitations

12.4.40 This assessment draws upon relevant conclusions from the **Combined Modelling and Appraisal Report (Document Reference 7.10)** and the optioneering exercise undertaken for proposed Walking, cycling and horse-riding routes as well as other technical assessment chapters.

12.4.41 Qualitative assumptions have been made with regards to the frequency of use of community land and assets within the study area, accounting for the type of community facility and likely usage by members of the community.

12.4.42 In particular, likely 'primary' environmental or physical effects arising from changes in traffic, noise and air quality which may lead to secondary population and human health effects were considered.

12.4.43 Census and other baseline health data characterise the study area at a single temporal point. The 2021 Census data is currently being released in phases, however the majority of available census data is from 2011, which is likely to have evolved in the last 11 years, more so given the effects of Covid-19. Data is often aggregated at different scales in different sources. For example, census data is aggregated at the lower super output area level but regional and local authority level trends are presented within The Office for Health Improvement and Disparities (OHID) profile. Therefore, comparisons can be limited.

12.4.44 There is a significant amount of literature regarding the evidence base for pathways between aspects of development and health outcomes. In order to provide a proportional assessment, a full literature review is not provided, and the aspects considered in the DMRB LA 112 (Highways England, 2020) provide the starting point for scoping of relevant determinants of health to be considered.

12.4.45 It should be noted that the focus of this assessment is public or population level health. Individual occupational health and safety issues are not within the remit of this assessment.

12.4.46 As noted, this assessment draws upon other assessments undertaken within the **ES (Document Reference 6.1)**, and the approaches used therein, and is therefore subject to the limitations of those contributory assessments. Conclusions have been drawn directly from contributory assessments where, for example, quantitative assessment has been undertaken, including noise and air quality.

12.4.47 Ambient air quality in the UK is assessed against National Air Quality Strategy Objectives (NAQOs), in which the concentrations against which compliance is assessed are health based, but not completely so. NAQOs also take into account the technical and economic feasibility of achieving them. In contrast, World Health Organisation (WHO) Guideline Values are wholly health based (to protect the most vulnerable individuals in society such as the young and old) and are lower for some pollutants than the NAQOs. The pollutants of particular

concern for human health are Particulate Matter (PM)10 and PM2.5, in which the WHO Guideline Values are more stringent than the NAQOs.

12.4.48 The air quality assessment in **Chapter 5 (Air Quality)** of the **ES (Document Reference 6.1)** has assessed against the relevant NAQOs and been incorporated into the assessment in **Section 12.9** of this ES chapter. The National Air Quality Assessment uses NAQOs because these are a legal requirement. The Objectives (NAQOs) are set out in the Air Quality Standards Regulations 2010 (and subsequent amendments) which transposes the EU Directive (2008/50/EC) on ambient air quality and cleaner air for Europe and consolidates the Air Quality Regulations 2010 and subsequent amendments. Conversely, the WHO Guideline Values have not been transposed into UK or EU legislation therefore compliance with them is not a legal requirement. Furthermore, best practice prepared by the Institute of Air Quality Management (IAQM) and Environmental Protection UK states that when arriving at a planning decision, local authorities should pay particular attention to compliance with the NAQOs when considering air quality.

12.4.49 Where relevant, consideration has been given to how the Covid-19 pandemic may have had impacts on the baseline section of this chapter, for example community land and assets usage or accessibility to facilities and services. Where relevant, limitations regarding the Covid-19 pandemic on the assessments of air quality and noise has been set out in **Chapter 5 (Air Quality)** and **Chapter 11 (Noise and Vibration)** of the **ES (Document Reference 6.1)**.

12.5 Study area

12.5.1 The study areas used to undertake the assessment on population and human health is outlined in **Table 12.2** for the land use and accessibility assessment and **Section 12.4.25** for the human health assessment.

12.6 Baseline conditions

Land use and accessibility

Private property and housing

Private property

12.6.1 There is one private residential property within the Application Boundary, listed in **Table 12.7.** White Hill Cottage is most likely to experience direct impacts associated with the Scheme, such as temporary land take or disruption during construction activities. In accordance with DMRB LA 112, it is an existing house of <30 houses and therefore has a medium sensitivity.

Table 12.7: Private properties within Application Boundary

Receptor	Location	Area (ha) affected by development	Sensitivity
White Hill Cottage	Easton Lane, SO21 1DQ	0.0213	Medium

12.6.2 There are further residential properties within 500m of the Application Boundary which may be impacted indirectly by the Scheme, for example with regards to amenity affects or wider changes to the road network. This includes larger settlements like Winchester and Kings Worthy, as well as smaller settlements such as Easton and isolated properties.

12.6.3 The projection figures indicated that the Winchester City Council area population is expected to increase by 3% or 3,548 people between 2018 and 2023 which is in line with the national average (3%). At the date of opening the new junction the population is estimated to have increased by 4.97% on the base year of 2018[3]. The housing within the wider 500m study area is therefore determined to have low sensitivity.

Housing allocations

12.6.4 The LLP2 identifies land allocated for housing within Winchester City Council's administrative area. Approximately 400m north of the Application Boundary lies allocation Policy KW1 Land at Lovedon Lane, allocated space for 50 dwellings. It is understood that a development for 50 dwellings was consented in January 2016 to build Eversley Gardens (application reference 15/01624/FUL). This development is approaching completion and is therefore not considered as part of the assessment on housing allocations (but is considered with regards to private property and housing).

12.6.5 No other housing allocations lie within 500m of the Application Boundary.

12.6.6 With regards to the wider housing market and development allocations within Winchester City Council, the adopted Local Plan for Winchester has a housing target of 12,500 over the plan period 2011 – 2031 (Winchester City Council, 2011). The Future Local Housing Need and Population Profile Assessment (Winchester City Council, 2020) suggests a local housing need of 664 dwellings per annum over the emerging local plan period (2021 – 2030).

[3] ONS 2018-based subnational population projections for Winchester

12.6.7 The Winchester District Strategic Housing Market Assessment (2020) concludes there are three distinct housing sub-markets in the district which demonstrate different characteristics:

- **Winchester Town Market Area:** covering Winchester Town and partially containing the Scheme's Application Boundary, this area commands higher house prices than the rest of the district
- **Northern Market Area:** this area includes the remainder of the Scheme's Application Boundary and the area surrounding Winchester Town
- **Southern Market Area:** house prices are the lowest in this area, which has greater commuting connections to Portsmouth and Havant and is not in the Scheme's Application Boundary

12.6.8 Following consideration by the South Downs National Park Authority and Winchester City Council, both planning authorities adopted the Winchester District Local Plan Part 1 – Joint Core Strategy ('the Local Plan Part 1') in March 2013. At the time of adoption, the Local Plan Part 1 covered the whole of Winchester District, including the area that lies in the South Downs National Park. Following this, in 2019 the South Downs National Park Authority adopted the South Downs Local Plan (2014-33), this covers the entire South Downs National Park.

12.6.9 The Local Plan Part 1 sets out the overall vision, objectives, spatial strategy and strategic policies for the district. The emerging Winchester District Local Plan 2018-38 has progressed updates of its evidence base, but a draft plan is not yet available. A Strategic Issues and Priorities Document was consulted on during Feb/March 2021, with three meetings taking place between September and December 2021 to discuss any representations received during the consultation. This is an early phase of preparing the new Local Plan and would explore important issues that would influence the future Local Plan's development.

12.6.10 The current development strategy for the district identifies three spatial areas with accompanying vision and objectives, along with development requirements for – Winchester Town, Market Towns and Rural Area and South Hampshire Urban Area. The Local Plan Part 1 states that the principal focus for new development across the district would be within the urban areas of Winchester Town and the South Hampshire Urban Area. The development strategy (Policy DS1) plans for some around 12,500 new dwellings and 20 hectares of employment land to be delivered over the plan period. The following strategic developments set out in Winchester Local Plan are outside of the 500m study area of the Scheme, and therefore not considered within the assessment. However, a key objective of the Scheme is to support growth and ensure the junction can accommodate additional traffic, and therefore the Scheme will support the following development coming forward in terms of highway network capacity.

12.6.11 Around 4,000 new homes are planned within Winchester town. The Barton Farm development area would provide 2,000 including affordable housing, community facilities, a new primary school and a new park and ride facility to serve the north of Winchester.

12.6.12 Retention of existing employment land and premises along with new development or redevelopment to provide for new business growth to broaden Winchester's economic base is identified. This targets sector growth including knowledge, tourism, creative and media industries and more specifically start-up premises to encourage entrepreneurship including exploring opportunities at the employment site of Bushfield Camp, located to the southern edge of Winchester close to M3 junction 11.

12.6.13 Within Winchester city centre, additional retail floorspace through existing developments at Silver Hill are planned to support Winchester's role as a sub-regional shopping centre for existing and new communities.

12.6.14 The larger village of Kings Worthy, which forms part of the Market Towns and Rural Area in the Winchester Local Plan, is expected to contribute approximately 250 new homes over the plan period with any economic and commercial growth at a scale appropriate to the settle and its catchment area.

12.6.15 Market towns and rural areas within the Winchester Local Plan includes approximately 50 smaller settlements within the district, which range from market towns of a few thousand population to small hamlets of a few dwellings originally serving the agricultural sector. It includes the part of the South Downs National Park that is within Winchester District. Whilst this spatial area is largely rural in nature there are opportunities to address local needs and maximise attractive rural settings through tourism, local food production and niche markets which would be more resilient to wider changes in the economy.

12.6.16 Some settlements within this spatial area have an ageing population and those in an attractive setting with a school are often popular with in-migrants. The key objective is to ensure that the right amount and type of development occurs, so that existing communities can remain viable, with access to the services they need:

- 2,500 new homes in the Market Towns and Rural Area across Bishops Waltham, New Alresford, Colden Common, Denmead, Kings Worthy, Swanmore, Waltham Chase, and Wickham
- New employment uses through development and redevelopment opportunities within existing settlement boundaries in the first instance, along with retention of major commercial establishments in the countryside

Community land and assets

12.6.17 In terms of administrative geographies, the Scheme's Application Boundary and the 500m study area are located wholly within the Winchester City Council local authority area. The Scheme extent is located within the Alresford and Itchen

Valley, St Bartholomew, St Michael, The Worthys and Upper Meon Valley wards of Winchester City Council. The population profiles of these wards are provided within the human health section of this chapter.

Facilities and services

12.6.18 There are no community assets within the Application Boundary, and therefore no direct impacts on community assets are anticipated. There are however several community assets located within 500 m of the Application Boundary, which have the potential to be indirectly impacted by the Scheme. These are shown in **Figure 12.4 (Community land and assets)** of the **ES (Document Reference 6.2)** and summarised in **Table 12.8**.

Open land

12.6.19 The Scheme partially lies within the South Downs National Park (SDNP), which is in the jurisdiction of the SDNP Authority. While it is acknowledged that the SDNP is comprised of different attributes, including the use for the purposes of public recreation, the M3 acts as a barrier between Winchester and the SDNP. Furthermore, the parts of the SDNP within the Study Area comprises largely privately owned and farmed landscapes. Therefore, the entire SDNP is not considered an open space receptor, however various components within the SDNP (for example open access land) are identified and considered within the assessment. Impacts regarding the privately owned agricultural land holdings are set out in the Agricultural Land Holdings section below. Public Rights of Way which intersect with the Application Boundary and connect Winchester to the SDNP are considered within the Walking, Cycling and Horse-riding assessment.

12.6.20 Open Access Land is land which is made available to the public for recreation on foot only, as defined under the Countryside and Rights of Way Act 2000 (CRoW). The Natural England CRoW Map identifies an area of Open Access land that is outside of the Application Boundary but falls within 500m of the Application Boundary. Magdalen Hill Down lies within the SDNP north of the A31 and is shown on **Figure 12.4 (Community Land and Assets Receptors)** of the **ES (Document Reference 6.2)**.

12.6.21 There is community land located within 500m of the Application Boundary which has the potential to be indirectly impacted by the Scheme. These areas are shown in **Figure 12.4 (Community Land and Assets Receptors)** of the **ES (Document Reference 6.2)** and summarised in **Table 12.8**.

12.6.22 **Table 12.8** below summarises the community land and assets within the 500m study area, and assigns a sensitivity based on professional judgement taking into consideration a combination of factors including existing severance / accessibility, what alternatives are available, frequency of use and % community use. A worst-case approach has been adopted.

Table 12.8: Community land and assets within 500m of Application Boundary

Asset	Location from the Scheme	Description	Existing Severance / Accessibility / Alternatives	Frequency of Use / Community Use	Sensitivity
Community land					
Winnall Moors Nature Reserve	Immediately adjacent	Nature reserve	No or limited severance or accessibility issues. Alternative open space available in SDNP	Daily use with seasonal variations. Likely to be used by majority (>50%) of community	High
Gordon Avenue Playground	Immediately adjacent	Playground	No or limited severance or accessibility issues. Limited alternatives for children's play area for immediately surrounding residents	Daily use with seasonal variations. Likely to be used by minority (<50%) of community	Very High
Magdalen Hill Down	30 m east	Open Space and Nature reserve	No or limited severance or accessibility issues. Alternative open space available in SDNP	Daily use with seasonal variations. Likely to be used by majority (>50%) of community	High
Unnamed playground within Headbourne Worthy, adjacent to St Marys Church	50 m west	Playground	No or limited severance or accessibility issues. Limited alternatives for children's play area for immediately	Daily use with seasonal variations. Likely to be used by minority (<50%) of community	Very high

Asset	Location from the Scheme	Description	Existing Severance / Accessibility / Alternatives	Frequency of Use / Community Use	Sensitivity
			surrounding residents		
Milland Road Allotments	170 m west	Allotments	No or limited severance or accessibility issues. No alternatives in study area, but other allotment sites in Winchester.	Daily use with seasonal variations. Likely to be used by minority (<50%) of community	High
Winnall Manor Park	270 m west	Playground	No or limited severance or accessibility issues. Limited alternatives for children's play area for immediately surrounding residents	Daily use with seasonal variations. Likely to be used by minority (<50%) of community	Very high
King George V Playing Fields	Immediately adjacent	Playing fields	No or limited severance or accessibility issues. An alternative facility would be HCC sports ground c. 400m east	Weekly use with seasonal variations. Likely to be used by minority (<50%) of community	Medium
Hampshire County Council Sports Ground	250 m east	Playing fields	No or limited severance or accessibility issues. An alternative facility would be King George V Playing fields c. 400m west	Weekly use with seasonal variations. Likely to be used by minority (<50%) of community	Medium

Asset	Location from the Scheme	Description	Existing Severance / Accessibility / Alternatives	Frequency of Use / Community Use	Sensitivity
Community assets					
Kings Worthy Primary School	368m east	Mixed government school for children ages 4 - 11	No or limited severance or accessibility issues. Three other primary schools in Study Area	Daily attendance (during term time). Used by minority (<50%) of community	High
Prince's Mead School	450m west	Independent preparatory school for ages 3 – 11	No or limited severance or accessibility issues. Three other primary schools in Study Area	Daily attendance (during term time). Used by minority (<50%) of community	High
St Swithun's School	270m east	Independent school for girls aged 3 – 18.	No or limited severance or accessibility issues. Three other primary schools in Study Area	Daily attendance (during term time). Used by minority (<50%) of community	High
Winnall Primary School	430m west	Mixed public community school	No or limited severance or accessibility issues. Three other primary schools in Study Area	Daily attendance (during term time). Used by minority (<50%) of community	High
Springvale Playgroup	240m east	Playgroup within St Mary's Church Hall	No or limited severance or accessibility issues. Two other nurseries in Study Area	Daily attendance (during term time). Used by minority (<50%) of community	High
Stepping Stones Pre-School	450m west	Private nursery with some government	No or limited severance or accessibility issues. Two	Daily attendance (during term time). Used	High

Asset	Location from the Scheme	Description	Existing Severance / Accessibility / Alternatives	Frequency of Use / Community Use	Sensitivity
		funding for children aged 2 to 4/5	other nurseries in Study Area	by minority (<50%) of community	
Woodhams Farm Day Nursery	300m north	Education for children from 3 months to 5 years	No or limited severance or accessibility issues. Two other nurseries in Study Area	Daily attendance (during term time). Used by minority (<50%) of community	High
St Marys Church	100m west	Church	No or limited severance or accessibility issues. Two other churches in Study Area	Regular / weekly services. Likely to be used by minority (<50%) of community	Medium
Saint Swithuns Church	350m west	Church	No or limited severance or accessibility issues. Two other churches in Study Area	Regular / weekly services. Likely to be used by minority (<50%) of community	Medium
The Worthys Jubilee Hall	100m east	Local community centre	No or limited severance or accessibility issues. Limited alternatives for immediately surrounding residents, but other venues available in Winchester	Weekly use with seasonal variation. Likely to be used by minority (<50%) of community	Medium
Church Paddock Fishery	300m west	Fishing pond	No or limited severance or accessibility issues. Limited	Weekly use with seasonal variation.	Medium

Asset	Location from the Scheme	Description	Existing Severance / Accessibility / Alternatives	Frequency of Use / Community Use	Sensitivity
			alternatives within study area, although other fishing groups are within wider Winchester area	Likely to be used by minority (<50%) of community	
Dower House Nursing Home	200m north	Nursing home	No or limited severance or accessibility issues. Limited alternatives within study area, although there are several care homes within Winchester	Daily use. Likely to be used by minority (<50%) of community	Very High
Winchester Sport & Leisure Park	320m west	Sports park and gym	No or limited severance or accessibility issues. There are gyms within Study Area and Winchester	Daily use. Likely to be used by minority (<50%) of community	High
Winchester athletic track	210m west	Athletic track	No or limited severance or accessibility issues. No alternatives in local authority are	Weekly use. Likely to be used by minority (<50%) of community	High
St Giles Graveyard	480 m west	Graveyard	No or limited severance or accessibility issues. Alternatives available for open/ green space	Weekly use. Likely to be used by minority (<50%) of community	Medium

Asset	Location from the Scheme	Description	Existing Severance / Accessibility / Alternatives	Frequency of Use / Community Use	Sensitivity
King Aelfred Lodge	200m east	Community group	No or limited severance or accessibility issues. Limited alternatives for immediately surrounding residents, but other venues available in Winchester	Infrequent as membership based. Likely to be used by minority (<50%) of community	Low
Winchester Vineyard	450m west	Church	No or limited severance or accessibility issues. Two other churches in Study Area	Regular / weekly services. Likely to be used by minority (<50%) of community	Medium
Hampshire Cultural Trust	50m west	Cultural charity	No or limited severance or accessibility issues. Other cultural facilities available in Winchester	Daily use with seasonal variations. Likely to be used by minority (<50%) of community	Medium

Development land and businesses

Local businesses

12.6.24 The Winnall Industrial Estate is accessed from Easton Lane via the existing M3 Junction 9. It is a purpose-built facility that provides business units to a variety of retail (convenience and comparison) and industrial businesses. The immediate proximity of the estate to the strategic road network (i.e., M3 Junction 9) together with proximity to consumer markets provides a strategic locational advantage for businesses within the logistics and manufacturing sectors. Current industrial occupiers include a Royal Mail depot, Basepoint office space, Sydenhams Aggregates, APEM Components and B&M Steel.

12.6.25 Winnall Industrial Estate (and surrounding industrial areas) comprises three distinct areas:

- Central: this area includes a Tesco Extra and a noticeable grouping of retail warehouses and DIY stores orientated around large central car parks adjacent to Easton Lane, generating the feel of a retail park destination. The premises are largely uniform size, shape and finishing at double storey
- North: the northern half of Winnall Industrial Estate is dominated by large 'industrial' sheds and depots for industrial and related employment use, each with their own car park. Sectors represented here include automotive engineering and sales, building materials, electronics manufacturing and engineering consultancy. Two university halls of residence are also located along the western edge close to the River Itchen
- South and Outlying: the southern boundary of the industrial area is formed by Winnall Valley Road, a linear road with disparate small-scale trade shops, each with their own car parks. Both the layout and sectoral representation of businesses here are different from the public facing retail park further north. There are also outlying individual comparison retail and service units, such as the Midmay Vets, Mole Valley unit and the Homebase sections, which all have dedicated access and car parks specific to each business

12.6.26 **Table 12.9** sets out the development land and businesses within the study area. Data has been presented where possible from publicly available sources to help inform the sensitivity values. Where able to be sourced, this includes number of jobs.

Table 12.9: Development land and businesses within 500m of the Application Boundary

Receptor	Main activity	Jobs (where known)	Size of Employment Site	Existing Severance / Accessibility	Sensitivity
Winnall Industrial Estate including CEMEX	A range of warehouses, industrial sheds and depots, trade shops and other commercial enterprises	-	>5 ha	No or limited accessibility identified	Very high
Keir Highways	Construction company	-	<1 ha	No or limited accessibility identified	Medium

Receptor	Main activity	Jobs (where known)	Size of Employment Site	Existing Severance / Accessibility	Sensitivity
Tesco Extra	Supermarket	-	1 - 5 ha	No or limited accessibility identified	High
Cleaning Services Winchester	Domestic and commercial cleaning	-	<1 ha	No or limited accessibility identified	Medium
Closed Bridging Finance	Loan agency	< 10	<1 ha	No or limited accessibility identified	Medium
Alderbury Jack	Upholstery and vintage furniture shop	-	<1 ha	No or limited accessibility identified	Medium
Cart & Horses	Public house	-	<1 ha	No or limited accessibility identified	Medium
Kings Worthy Post Office	Postal office	-	<1 ha	No or limited accessibility identified	Medium
The Little Kitchen Company	Catering company	< 50	<1 ha	No or limited accessibility identified	Medium
Kings Worthy Garage	Vehicle repairs and servicing	-	<1 ha	No or limited accessibility identified	Medium
Wine Utopia	Off license	< 50	<1 ha	No or limited accessibility identified	Medium
Snows Winchester	Vehicle dealership	-	<1 ha	No or limited accessibility identified	Medium
Winchester car wash	Car wash service	-	<1 ha	No or limited accessibility identified	Medium
Accutek	Car electronics shop	-	<1 ha	No or limited accessibility identified	Medium

Receptor	Main activity	Jobs (where known)	Size of Employment Site	Existing Severance / Accessibility	Sensitivity
The Blooming Workshop	Florist	-	<1 ha	No or limited accessibility identified	Medium
Kings Worthy Foundry	Wood stove shop	-	<1 ha	No or limited accessibility identified	Medium
Winchester Coffee Roasters	Coffee shop	-	<1 ha	No or limited accessibility identified	Medium
Winchester Hardwood Flooring	Flooring	-	<1 ha	No or limited accessibility identified	Medium
Taylor Maxwell	Timber and building materials	-	<1 ha	No or limited accessibility identified	Medium
IttyBittyFox	Gift shop	-	<1 ha	No or limited accessibility identified	Medium
Lifestory	Home builder	-	<1 ha	No or limited accessibility identified	Medium
Bacardi Martini	Spirits wholesaler	-	<1 ha	No or limited accessibility identified	Medium
Envirosoil	Ground remediation specialists	-	<1 ha	No or limited accessibility identified	Medium
Mark 1 Tank	Model shop	-	<1 ha	No or limited accessibility identified	Medium
Massage Therapy Winchester	Massage therapist	<10	<1 ha	No or limited accessibility identified	Medium
R&W Environmental	Recycling facility		1-5 ha	No or limited accessibility identified	High

Receptor	Main activity	Jobs (where known)	Size of Employment Site	Existing Severance / Accessibility	Sensitivity
Bruton Nigel	Architectural services	< 10	<1 ha	No or limited accessibility identified	Medium
Red Electron	Lighting shop	-	<1ha	No or limited accessibility identified	Medium
BX2 Roadshow	DJ and music services	< 10	<1ha	No or limited accessibility identified	Medium
Radio Taxis Winchester	Taxi service	-	<1 ha	No or limited accessibility identified	Medium
One Stop	Convenience store	-	<1 ha	No or limited accessibility identified	Medium
On Point Sharpening Services	Sharpening service	-	<1 ha	No or limited accessibility identified	Medium
Mid-Hants Fire Protection	Fire protection equipment supplier	-	<1 ha	No or limited accessibility identified	Medium
The Golden Lion	Public house	-	<1 ha	No or limited accessibility identified	Medium
Welove2ski	Ski rental service	<10	<1 ha	No or limited accessibility identified	Medium
Wagilowe Dog Training	Dog trainer	<10	<1 ha	No or limited accessibility identified	Medium
Carapace Ink	Tattoo shop	-	<1 ha	No or limited accessibility identified	Medium
Winchester Basics Bank	Charity and food bank		<1 ha	No or limited accessibility identified	Medium

Receptor	Main activity	Jobs (where known)	Size of Employment Site	Existing Severance / Accessibility	Sensitivity
Stagecoach Garage	Bus depot	-	<1 ha	No or limited accessibility identified	Medium
DVSA Traffic Enforcement	Driver and vehicle licensing	-	<1 ha	No or limited accessibility identified	Medium
Chilcomb Ranges	Firing range	-	1-5 ha	No or limited accessibility identified	High
Chevron	Car dealership	-	<1 ha	No or limited accessibility identified	Medium
Phoenix Car Centre	Car dealership	-	<1 ha	No or limited accessibility identified	Medium
Partridge of Hampshire	Car dealership	-	<1 ha	No or limited accessibility identified	Medium
Hampshire County Supplies	Hampshire County Council Logistics	-	<1 ha	No or limited accessibility identified	Medium
Hampshire Transport Management	Hampshire County Council vehicle hire	-	<1 ha	No or limited accessibility identified	Medium
Hampshire Constabulary	Police station	-	<1 ha	No or limited accessibility identified	Medium
Emmaus	Charity and charity shop	-	<1 ha	No or limited accessibility identified	Medium
Hampshire Wardrobe	Costume hire	-	<1 ha	No or limited accessibility identified	Medium
Best Kebab	Fast food stand	-	<1 ha	No or limited accessibility identified	Medium

Land allocations

12.6.27 The LLP2 sets out the land allocations within Winchester City Council's administrative boundary. It identifies that the Winnall Industrial Estate is allocated under policy WIN11, which identifies the area as the main employment area for Winchester town.

12.6.28 The Winnall Planning Framework identifies a number of opportunities to enhance the quality of life for the local community and improve business performance. Although the Framework has no formal planning status, it is recognised as being a material planning consideration, meaning that the framework is taken into account during decision-making but there is no statutory requirement for compliance.

12.6.29 The Framework recognises opportunities to improve pedestrian and cycle access to the countryside and SDNP, given the location of Winnall, and highlights the need to provide additional open space and improve local community infrastructure.

12.6.30 Winnall is the largest employment area in Winchester Town and generally the area is thriving with very few vacant premises. The policy therefore is aimed at retaining the core of the employment area in traditional employment uses (Use Classes B1, B2, and B84) while allowing for a degree of flexibility in those parts of the employment area where change might be expected. It also recognises the need to maximise opportunities for improvements to community infrastructure, open space and green infrastructure provision.

12.6.31 There are no employment allocations within 500m of the Application Boundary.

Agricultural land holdings

12.6.32 Effects on agricultural land and soils are provided within **Chapter 9 (Geology and Soils)** of the **ES (Document Reference 6.1)**, which presents the Agricultural Land Classification and anticipated effects of the Scheme on soils. This chapter identifies the known agricultural land holdings within the Application Boundary.

12.6.33 **Table 12.10** sets out the Agricultural Land Holdings within the total area within the Application Boundary that are anticipated to experience direct impacts as a result of the Scheme. Approximately 49.1ha of land within the Application Boundary is within an Agricultural Land Holding.

12.6.34 Consideration has been given to where the operation of the farm is dependent on the spatial relationship of land to key agricultural infrastructure. Arable land use will typically be partially dependent on the spatial relationship of land to key agricultural infrastructure, as access may be required occasionally e.g. for ploughing or spread of fertiliser etc., however there is some flexibility in timings for access. Other farming operations, for example if there is intensive livestock

[4] Use Class B1: offices and light industrial, Use Class B2: general industrial, Use Class B3: storage or distribution

production undertaken within buildings, are more dependent on spatial relationship as land must be accessed frequently or regularly to feed animals and maintain the farm operations.

Table 12.10: Agricultural Land Holdings within the Application Boundary

Name of Farm	Use	Existing severance/ accessibility	Commentary	Sensitivity
The Dairy House	Arable	No or limited accessibility identified	Partially dependent on the spatial relationship of land to key agricultural infrastructure as land use is arable farming, and therefore some flexibility in the normal course of operations. Access required on a reasonably frequent basis	Medium
Itchen Down Farm	Arable	No or limited accessibility identified	Partially dependent on the spatial relationship of land to key agricultural infrastructure as land use is arable farming, and therefore some flexibility in the normal course of operations. Access required on a reasonably frequent basis	Medium
Fulling Mill Estate	Arable	No or limited accessibility identified	Partially dependent on the spatial relationship of land to key agricultural infrastructure as land use is arable farming, and therefore some flexibility in the normal course of operations. Access required on a reasonably frequent basis	Medium
Winnall Down Farm	Arable	No or limited accessibility identified	Partially dependent on the spatial relationship of land to key agricultural infrastructure as land use	Medium

Name of Farm	Use	Existing severance/ accessibility	Commentary	Sensitivity
			is arable farming, and therefore some flexibility in the normal course of operations. Access required on a reasonably frequent basis	

Walkers, cyclists and horse-riders

12.6.35 There are 2~~3~~32 PRoWs that interact with or are in close proximity to the Scheme, as shown on **Figure 12.6 (Walking, Cycling and Horse-riding Receptors)** of the **ES (Document Reference 6.2)** and set out below. As outlined in **Chapter 7 (Landscape and Visual)** of the **ES (Document Reference 6.1)** there are a number of existing PRoW within the Application Boundary, which form part of the wider network:

- South Downs Way
- National Cycle Network 23 (NCN 23)
- Itchen Way
- St Swithun's Way, Allan King Way and Pilgrim's Way
- Three Castles Path
- Local PRoW:
  - Winchester Footpaths 505~~,and~~ 515 and 521
  - Winchester Bridleways 502, 504, and 520
  - Headbourne Worthy Footpaths 6 and 749
  - Itchen Valley Footpaths 20, 21, 22, 27, 44 and 49
  - Kings Worthy Footpath 9 and 10

12.6.36 The South Downs Way National Trail which crosses the M3 in a west–east alignment using an overbridge south of Junction 9.

12.6.37 The NCN 23, linking Reading to Southampton, crosses Junction 9 via at-grade crossings. The cycleway is routed onto Easton Lane in the industrial estate from the south, crossing the motorway junction via two at-grade crossings, before

continuing along Easton Lane to the east. Easton Lane at this point is bridleway 502 as it crosses the junction and for approximately 200m until it becomes a small, single carriageway metalled track from which some isolated residential properties/farms may be accessed. There is no through-route for motorised traffic across the junction via Easton Lane.

12.6.38 There are five distance paths (regional trails) following the Itchen valley. The Allan King Way, Pilgrim's Way and St Swithun's Way follow the same route on the west side of the valley, crossing the A34 immediately north of the Scheme location via an underpass into Kings Worthy. The Itchen Way and Three Castles Path follow another route on the east side of the valley, crossing under the A34 where the River Itchen crosses, within the footprint of the Scheme. The two long distance paths diverge approximately 600m east of the A34, with the Three Castles Path crossing the M3 via a subway approximately 740m north of the Scheme, whilst the Itchen Way joins St Swithun's Way and crosses the M3 approximately 380m further along.

12.6.39 In addition to these PRoW, there are several footpaths which run along the existing road, including the A33/A34 Southbound ~~PRoW~~ and ~~the~~ on Easton Lane which have been considered ~~PRoW~~. These routes are used by staff of the Keir Highways depot, who would walk or cycle to work.

12.6.40 The following five PRoWs are also considered as they directly interact with PRoW that are affected by the scheme and are within the 5km wider study area:

- Headbourne Worthy 701
- Itchen Valley 23
- Kings Worthy 11

~~12.6.39~~ Winchester 506 and 507.

-

12.6.41 These PRoWs are shown on **Figure 12.7** of **Chapter 12 (Population and Human Health – Figures)** of the **ES (6.2, Rev 2)**.

~~12.6.40~~12.6.42 The location of the Scheme on the edge the SDNP to the east means that the majority of pedestrian and cycling journeys that cross the Scheme from Winchester would likely be for recreational purposes. However, community infrastructure such as St Swithun's School and Leigh House Hospital east of the M3 can be accessed via the cycleway or Alresford Road and likewise, it is possible that some residents from the villages and properties east of the M3 would access services within Winchester via the same routes.

12.6.43 The routes identified above are likely to be heavily used as the M3 acts as a barrier between Winchester and the SDNP and these represent the only crossing points available in the vicinity of the Application Boundary. The existing M3 corridor and highway network creates a degree of severance on this PRoW

network. The sensitives of each PRoW or route have been identified in **Table 12.11**.

Table 12.11: Existing PRoW or route that directly interact with the Scheme or directly interact with PRoW affected by the Scheme

PRoW	Location	Description	Existing severance / accessibility	Frequency of Use	Sensitivity
NCN 23	Crosses Junction 9 at at-grade crossings	Cycle route linking Reading to Southampton	Disrupted by current junction layout as cyclists must dismount	Daily	Very high
South Downs Way	Crosses the M3 in a west–east alignment using an overbridge south of Junction 9	National trail running from Winchester to Eastbourne	No or limited accessibility identified	Daily	Very High
Itchen Way	Crosses beneath the A34 north of Winnall Estate	Long distance footpath of regional significance following the River Itchen	No or limited accessibility identified	Daily	High
St Swithun's Way	Crosses A34 via underpass into Kings Worthy	Historic long distance footpath Winchester to Farnham	No or limited accessibility identified	Daily	High
Three Castles Path	Crosses beneath the A34 north of Winnall Estate	Long distance footpath Winchester to Windsor	No or limited accessibility identified	Daily	High
Allan King Way	Crosses A34 via underpass	Long distance footpath Winchester to Portsmouth	No or limited accessibility identified	Daily	High

PRoW	Location	Description	Existing severance / accessibility	Frequency of Use	Sensitivity
	into Kings Worthy				
Pilgrim's Way	Crosses A34 via underpass into Kings Worthy	Long distance footpath Winchester to Canterbury	No or limited accessibility identified	Daily	High
Winchester Footpath 505	Crosses the M3 in a west–east alignment using an overbridge south of Junction 9	Local footpath connecting Winchester to the SDNP	No or limited accessibility identified	Daily	Medium
Winchester Footpath 515	South of Easton Lane roundabout	Local footpath adjacent to Winnall Estate	No or limited accessibility identified	Daily	Medium
Winchester Footpath 521	This footpath runs parallel to the M3 connecting to Alresford Road	Local footpath parallel to the M3	No or limited accessibility identified	Daily	Medium
Winchester Bridleway 502	Crosses Junction 9 through underpass	Local bridleway connecting Winchester to the SDNP	No or limited accessibility identified	Daily	Medium
Winchester Bridleway 504	Crosses the M3 in a west–east alignment using an overbridge south of Junction 9	Local bridleway connecting Winchester to the SDNP	No or limited accessibility identified	Daily	Medium
Winchester Bridleway 506	This footpath runs east-west to the				

PRoW	Location	Description	Existing severance / accessibility	Frequency of Use	Sensitivity
	west of bridleway Winchester 504, and to the east of Fivefields Road	Local footpath connecting Winchester to the SDNP	No or limited accessibility identified	Daily	Medium
Winchester Bridleway 507	This footpath runs in a north-south connecting footpath Winchester 14 and bridleway Winchester. 504	Local footpath connecting Winchester to the SDNP	No or limited accessibility identified	Daily	Medium
Winchester Bridleway 520	Crosses Junction 9 through underpass	Local bridleway connecting Winchester to the SDNP	No or limited accessibility identified	Daily	Medium
Headbourne Worthy Footpath 6	Crosses A34 via underpass into Kings Worthy	Local footpath connecting Headbourne Worthy to Kings Worthy	No or limited accessibility identified	Daily	Medium
Headbourne Worthy Footpath 701	This footpath runs in a north-south alignment starting at Headbourne Worthy 6 and ending at Winchester 8 at the Parish Boundary	Local footpath following River Itchen	No or limited accessibility identified	Daily	Medium
Headbourne Worthy	Crosses beneath the A34 north of	Local footpath following River Itchen	Poorly maintained	Weekly	Low

PRoW	Location	Description	Existing severance / accessibility	Frequency of Use	Sensitivity
Footpath 749	Winnall Estate				
Itchen Valley Footpath 20	Runs adjacent to M3 south of Kings Worthy	Local footpath following River Itchen	Footpath currently inaccessible	Scarcely	Low
Itchen Valley Footpath 21	Runs adjacent to M3 south of Kings Worthy	Local footpath following River Itchen	No or limited accessibility identified	Daily	Medium
Itchen Valley Footpath 22	Runs from River Itchen to Easton, crosses M3 using subway	Local footpath following River Itchen	No or limited accessibility identified	Daily	Medium
Itchen Valley Footpath 23	This footpath runs from Road U.179 at Easton School to Junction with Itchen Valley Footpath 22	Local footpath following River Itchen	No or limited accessibility identified	Daily	Medium
Itchen Valley Footpath 27	Follows River Itchen crossing M3 south of B3047	Local footpath following River Itchen	No or limited accessibility identified	Daily	Medium
Itchen Valley Footpath 44	Crosses M3 on overbridge north of Gray Farm	Local footpath in Martyr Worthy	No or limited accessibility identified	Daily	Medium

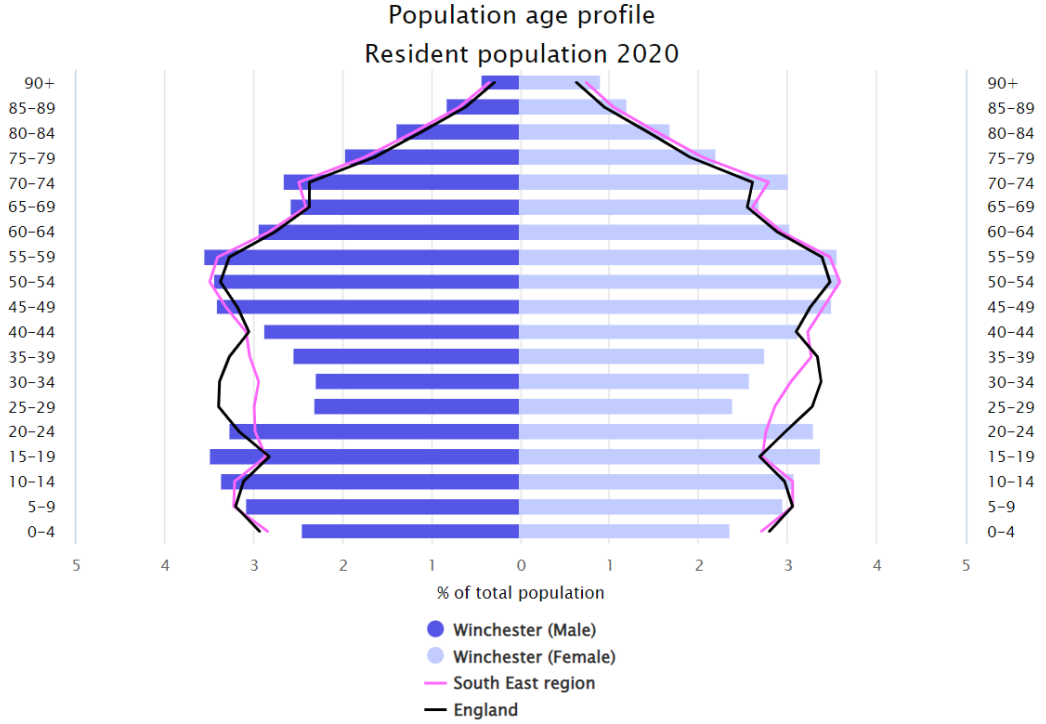
PRoW	Location	Description	Existing severance / accessibility	Frequency of Use	Sensitivity
Itchen Valley Footpath 49	Runs in a north south direction along Itchen Way	Local footpath following River Itchen	No or limited accessibility identified	Daily	Medium
Kings Worthy Footpath 9	Rungs east-west parallel to River Itchen	Local footpath in Kings Worthy	No or limited accessibility identified	Daily	Medium
Kings Worthy Footpath 10	Rungs east-west parallel to River Itchen	Local footpath in Kings Worthy	No or limited accessibility identified	Daily	Medium
Kings Worthy Footpath 11	This footpath runs east-west parallel to River Itchen and connects with King's Worthy Footpath 10	Local footpath in King's Worthy	No or limited accessibility identified	Daily	Medium
A33 Southbound footpath	Runs along existing A33 southbound alignment	Local footpath following A33 alignment	Requires crossing of gyratory creating an unpleasant and potentially unsafe walking environment	Daily	High
Easton Lane footpath~~PRoW~~	Joins Junction 8 network at Easton Lane	Local footpath	No or limited accessibility identified	Daily	High

Health

General health characteristics and distribution of vulnerable groups

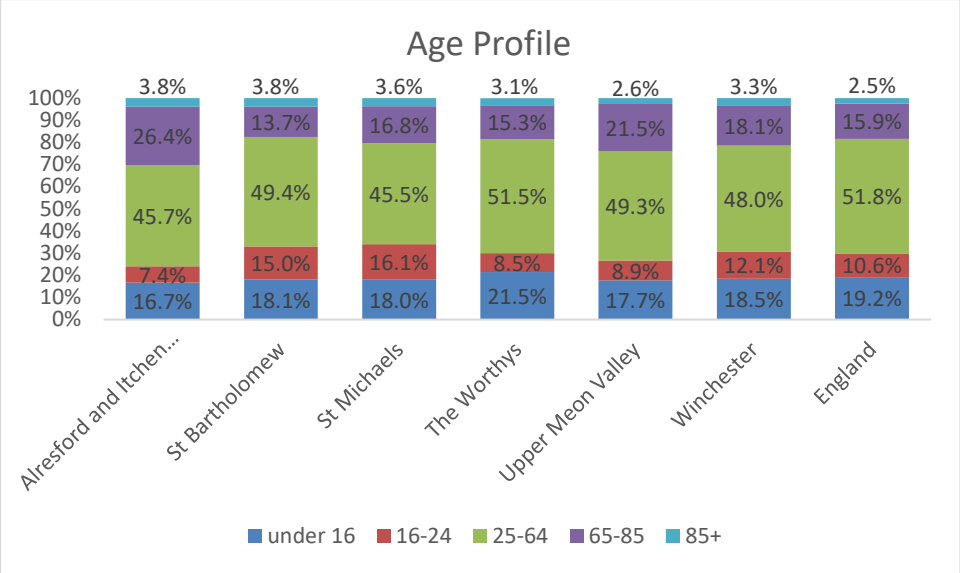
~~12.6.41~~12.6.44 The 2021 Census data indicates that Winchester has a population of 127,500 in 2021 (NOMIS, 2022).

~~12.6.42~~12.6.45 With regards to age distribution, Winchester has a lower proportion of people aged 25 – 44 than the England and South East region average. Aligned with this, it has a similar or greater proportion of people within the 9 – 24 age brackets and 45 – 90+ age brackets compared to the England and South East region average, as shown in **Inset 12.1**.



Inset 12.1: Age Profile for Winchester (OHID, 2020)

~~12.6.43~~12.6.46 The age profiles for the wards in which the Scheme is located show that all wards have a similar age profile to each other as well as the Winchester and England averages (**Inset 12.2**). The ward of Alresford and Itchen Valley has the highest proportion of people aged 65 – 85, and the lowest proportion of those aged under 16, and in the 16-24 age bracket.



Inset 12.2: Age profile comparison (OHID, 2020)

Existing health outcomes

~~12.6.44~~12.6.47 The following sections presents the existing health outcomes within the study area, which includes data collated prior to the COVID-19 pandemic. The impacts of the pandemic are still emerging, and the most up to date data has been used where available.

~~12.6.45~~12.6.48 The average life expectancy at birth for men and women within the wards, Winchester and England are displayed in **Table 12.12**. This data shows that the wards and Winchester have a higher life expectancy than the national average, with the exception of St Bartholomew which is marginally lower for both male and female life expectancy.

Table 12.12: Life expectancy at birth 2015-2019 (OHID, 2020)

Indicator	Alresford and Itchen Valley	St Bartholomew	St Michael	The Worthys	Upper Meon Valley	Winchester	England
Life expectancy at birth (male) (years)	82.2	78.9	81.4	84.4	82.6	81.9	79.7
Life expectancy at birth (female) (years)	86.3	83.0	86.4	86.8	87.6	85.3	83.2

~~12.6.46~~12.6.49 In relation to adult health, Winchester performs similar or better than the England average with regards to under 75 mortality rate from all causes, cardiovascular disease and cancer, suicide rate, emergency hospital admissions for intentional self-harm, hip fractures in people aged 65 and over, admission episodes for alcohol specific conditions, smoking prevalence, percentage of adults classified as overweight or obese, STI diagnoses and TB incidence. However, it performs significantly worse than the England average in relation to killed and seriously injured rate on England's roads, estimated diabetes diagnosis rate and estimated dementia diagnosis rate (aged 65 and over) (OHID, 2020).

~~12.6.47~~12.6.50 **Table 12.13** presents indictors for health outcomes including long term illness or disability, obesity, emergency hospital admissions and general health. Each ward has been coloured coded as follows: green indicates significantly better than the England average, orange shows no significant difference, and red shows significantly worse than the national average (not available for Winchester data).

~~12.6.48~~12.6.51 **Table 12.13** shows that each ward generally performs similar or significantly better than the national average for a range of health outcomes. However, it should be noted that while a ward may perform better than the national average for a given health outcome, there is still a proportion of the population with that health issue. A key exception is the wards of St Bartholomew and St Michael perform significantly worse than the national average for hospital stays for self-harm.

Table 12.13: Health outcomes (OHID, 2021)

Indicator	Alresford and Itchen Valley	St Bartholomew	St Michael	The Worthys	Upper Meon Valley	Winchester	England
Living with a long-term illness or disability (%)	15.5	17.9	14.8	13.6	12.0	14.5	17.6
Reception: Prevalence of overweight (including obesity) (%)	21.6	21.4	18.9	21.4	18.5	20.7	22.6
Reception: Prevalence of obesity (including severe obesity) (%)	5.4	8.9	5.4	7.1	7.4	6.8	9.7
Year 6: Prevalence of overweight (including obesity) (%)	21.6	25.0	23.5	28.6	26.9	24.9	34.6
Year 6: Prevalence of obesity (including severe obesity) (%)	9.8	11.5	11.8	11.9	15.4	12.6	20.4

Indicator	Alresford and Itchen Valley	St Bartholomew	St Michael	The Worthys	Upper Meon Valley	Winchester	England
Emergency hospital admissions for all causes (SAR)*	73.5	86.4	84.2	76.2	61.5	77.5	100
Emergency hospital admissions for coronary heart disease (SAR)*	72.7	109.2	55.9	57.9	47.9	64.1	100
Emergency hospital admissions for stroke (SAR)*	85.4	109.0	81.0	65.8	59.1	89.5	100
Emergency hospital admissions for myocardial infarction (heart attack) (SAR)*	78.4	97.5	58.4	78.2	59.1	74.5	100
Emergency hospital admissions for Chronic Obstructive Pulmonary Disease (COPD) (SAR)*	48.3	92.7	102.9	32.8	24.0	55.6	100
Hospital stays for self-harm (SAR)*	56.7	136.8	156.6	95.3	25.6	98.3	100
Incidence of all cancer (SIR per 100)**	87.5	96.1	87.2	84.2	90.9	92.5	100
Deaths from all causes, all ages (SMR)***	74.5	93.5	84.3	69.2	66.9	83.6	100
Deaths from respiratory diseases, all ages (SMR)***	72.0	106.5	60.0	35.4	38.8	72.9	100

*SAR: Standardised Admission Ratios

** SIR: Standardised Incidence Ratio

*** SMR: Standardised Mortality Ratios

Employment, income and deprivation

~~12.6.49~~12.6.52 **Table 12.14** presents key labour market statistics for Winchester as recorded by the Annual Population Survey (ONS, 2022a).

Table 12.14: Economic activity and employment 2021

	Economic Activity Rate	Employment Rate
Winchester	83.6%	83.2%

South-east	80.8%	77.6%
England	78.7%	75.1%

~~12.6.50~~12.6.53 The economic activity rate (83.6%) and employment rate (83.2%) in Winchester are higher than regional and national averages. At the same time, residents of Winchester are relatively highly skilled with 48.7% of the population aged 16-64 holding a degree-level qualification or equivalent (NVQ4+) (ONS, 2022a) as shown in **Table 12.15**.

Table 12.2: Qualifications held by residents aged 16-64 2021

	Winchester	South-east	England
NVQ4+	48.7%	45.1%	43.1%
NVQ3+	67.3%	63.7%	61.3%
NVQ2+	83.9%	80.7%	78.2%
NVQ1+	95.5%	90.4%	87.8%
Other	No data	4.6%	5.9%
None	3.5%	5.0%	6.4%

~~12.6.51~~12.6.54 This high skills profile is reflected in the occupational structure of the Winchester district, with 55.7% of those in employment in Standard Occupational Classification (SOC2010) levels 1 – 3, representing the highest skilled jobs. This is higher than the south-east (53.3%) and England as a whole (50.0%) (ONS, 2022a). This is summarised by **Table 12.16.**

Table 12.16: Employed workforce 2021 by Standard Occupational Classification 2010

SOC2010	Winchester		South-east		England	
	'000s	%	'000s	%	'000s	%
1: Managers, Directors and Senior Officials	9.6	14.1%	553.3	12.2%	2,931.9	10.8%
2: Professional	17.0	25.0%	1,114.8	24.6%	6,499.1	23.9%
3: Associate Professor and Technical	11.3	16.6%	747.9	16.5%	4,172.6	15.3%
4: Administrative and Secretarial	6.1	8.9%	470.2	10.4%	2,779.9	10.2%
5: Skilled Trades	5.2	7.7%	381.1	8.4%	2,361.9	8.7%

SOC2010	Winchester		South-east		England	
	'000s	%	'000s	%	'000s	%
6: Caring, Leisure and Other Service	6.8	9.9%	421.6	9.3%	2,472.5	9.1%
7: Sales and Customer Service	5.2	7.6%	284.0	6.3%	1,844.2	6.8%
8: Process, Plant and Machine Operatives	3.8	5.6%	183.3	4.1%	1,475.7	5.4%
9: Elementary	3.1	4.5%	356.5	7.9%	2,586.3	9.5%
Total	**68.1**	**100.0**	**4,512.7**	**100.0**	**27,124.1**	**100.0**

~~12.6.52~~12.6.55 Higher skilled jobs typically command higher wages. **Table 12.17** shows that the median gross annual pay of Winchester residents in 2021 (£37,203) was 9.5% higher than the regional median (£33,983) and 18.1% higher than the average across England (£31,490) (ONS, 2022b). However, workplace earnings in Winchester were similar compared to the south-east and England as a whole. This suggests that a proportion of higher skilled individuals, with higher renumeration on average, work outside of the district on a daily basis and commute from their place of residence.

Table 12.17: Gross annual pay, 2021

Geographic Area	Median Gross Annual Pay (Resident)	Median Gross Annual Pay (Workplace)
Winchester	£37,203	£33,601
South-east	£33,983	£32,810
England	£31,490	£31,480

~~12.6.53~~12.6.56 The Indices of Multiple Deprivation (IMD) 2019 is a measure of deprivation experienced by people living in an area. The IMD scores of the wards, Winchester and England are shown in **Table 12.18**. The lower the score, the less deprived the ward. This data shows that the wards are lower than the national IMD score.

~~12.6.54~~12.6.57 **Table 12.18** also displays % of population in income deprivation, child poverty and older people in deprivation. Each ward has been coloured coded as follows: green indicates significantly better than the England average, orange shows no significant difference, and red shows significantly worse than the national average (not available for IMD Score or Winchester data).

~~12.6.55~~12.6.58 This data shows that the wards perform significantly better than the national average regarding deprivation, with the exception of St Michael which performs similar to the national average for % of older people in deprivation.

Table 12.18: Deprivation (OHID, 2021)

	Alresford and Itchen Valley	St Bartholomew	St Michael	The Worthys	Upper Meon Valley	Winchester	England
IMD, 2019	8.8	14.2	13.0	7.4	12.1	9.6	21.7
Income deprivation (%)	4.9	9.1	8.5	5.2	4.2	5.8	12.9
Child poverty (%)	6.4	11.1	7.0	7.3	4.0	7.2	17.1
Older people in deprivation (%)	6.0	10.9	14.8	4.6	6.0	7.3	14.2

Healthy environment

~~12.6.56~~12.6.59 An Air Quality Management Area (AQMA) was declared in 2003 for Winchester Town Centre for Nitrogen dioxide NO_2 and Particulate Matter PM_{10}. As noted within **Chapter 5 (Air Quality)** of the **ES (Document Reference 6.1),** in previous years exceedances of the air quality threshold for annual mean NO_2 were measured at several locations within Winchester City Centre. However, in 2019 all but one site was measured as having an exceedance of the air quality threshold for annual mean NO_2. Furthermore, Defra background mapping shows that background concentrations for NO_2, PM_{10} and PM_{25} are below the air quality thresholds.

~~12.6.57~~12.6.60 **Chapter 11 (Noise and Vibration)** of the **ES (Document Reference 6.1)** identified three Noise Important Areas (NIA) as follows:

- NIA 4008 – located to the west of the M3, south of the Junction 9 gyratory
- NIA 4007 – located along the A34 in Kings Worthy
- NIA 4006 – located to the west of the M3 to the north of Junction 9

~~12.6.58~~12.6.61 With regards to sources and pathways of potential pollution, **Chapter 13 (Road Drainage and the Water Environment)** of the **ES (Document Reference 6.1)** details the existing surface water drainage of the M3 Junction 9. It identifies that there are 17 Priority Outfalls from the National Highways network to the River Itchen catchment within the study area and numerous

soakaway chambers and soakaway trenches, as well as four surface water Priority Culverts.

~~12.6.59~~12.6.62 Groundwater screening results indicate that the existing soakaway ditch risk to groundwater is in the high end of the Medium category, however the existing discharge to the River Itchen does not result in an unacceptable risk of pollution. The following categories of pollution are:

- Copper, Zinc, Cadmium, Total Polyaromatic Hydrocarbons (PAH), Pyrene, Fluoranthene, Anthracene, and Phenanthrene
- Total Suspended Solids (TSS)
- HGV-load spillage (unspecified liquids)
- Microplastics (MPs)

~~12.6.60~~12.6.63 There is currently one pollution control device (PCD) close to the current gyratory roundabout and is located just upstream of the only river outfall, which comprises an open ditch of approximately 60m^3 capacity. It terminates in a penstock, a full-retention interceptor and a 300mm diameter piped outfall to the River Itchen. The PCD is intended to be retained, subject to inspection and renovation.

~~12.6.61~~12.6.64 **Chapter 9 (Geology and Soils)** of the **ES (Document Reference 6.1)** describes the baseline geo-environmental conditions, identifying the following landfills within the Application Boundary:

- The ‘Spitfire Link, Easton Lane’ landfill is thought to contain disposal of soils generated from the construction of M3 and is considered likely to be predominantly inert in nature, therefore not representing a risk of significant contamination
- The ‘King George V Playing Fields’ landfill has no information in relation to the waste accepted or dates, and it is possible that the historical landfill boundary is incorrect. Given this, and that the proposed works in this area are limited, it is not considered that this historical landfill record represents a potential risk of significant contamination
- The ‘Land Adjacent to Winchester Bypass, Abbots Worth, Hampshire’ landfill is recorded as accepting inert waste from 1967-68. It has not been identified as gassing and is therefore considered to not represent a risk of significant contamination
- The ‘Land Between Old Newbury Railway and A33’ contains earth spoil from the construction of the A34 and is not identified as gassing. It is considered that this historical landfill does not represent a risk of significant contamination

~~12.6.62~~12.6.65 The historical land use shows several potential sources for contamination, including:

- Several chalk pits
- Former Didcot, Newbury and Southampton railway line
- Former Vulcan Iron Works
- Former Winnall Gas Works
- Construction spoil from Winchester by-pass
- Historic activities at the current Wykenham Industrial Estate, including saw mills and rubber moulding works

~~12.6.63~~12.6.66 The **Ground Investigation Report (Document Reference 7.11)** considers that there is a worst-case Low potential for a significant contamination hazard within the Application Boundary.

Transport and travel

~~12.6.64~~12.6.67 The PRoW (including bridleways), cycleways and local routes have been set out and described under the walking, cycling and horse-riding heading above. **Figure 12.6 (Walking, cycling and horse-riding receptors)** of the **ES (Document Reference 6.2)** shows the routes that interact with the Scheme.

Modes of transport

~~12.6.65~~12.6.68 Census data (ONS, 2011) in relation to method of travel to work identified that the 63% of people in Winchester travel by car or van, with 5% identified as being a passenger in a car or van. The next common mode of transport is on foot at 10%, with only 2% of people cycling to work. 8% of the people in Winchester took public transport.

~~12.6.66~~12.6.69 **Table 12.19** shows the breakdown of distances travelled to work in Winchester. The majority of people in Winchester travel between 10 – 20 km to work (24%).

Table 12.19: Distances travelled to work in Winchester (ONS, 2011)

Distance Travelled to work	% of people Winchester
Less than 2km	13
2km to less than 5km	11
5km to less than 10km	14

Distance Travelled to work	% of people Winchester
10km to less than 20km	24
20km to less than 30km	8
30km to less than 40km	4
40km to less than 60km	3
60km and over	6
Work mainly at or from home	12
No fixed place of work	6

~~12.6.67~~12.6.70 For journeys that were less than 2 km, 56.2% of people travelled to work on foot, 4.7% cycled, 3.9% took public transport and 30.3% drove a car or van.

~~12.6.68~~12.6.71 At the time of the 2011 Census, 12% of people in Winchester identified as mainly working at or from home. The Covid-19 pandemic is likely to have drastically altered these commuter travel patterns, and in June 2020, ONS[5] published a high-level summary of these major changes. It identified that, between 11 – 14 June, approximately 37.7% of people in Britain were working from home only, and 11.2% adopted a hybrid way of working at home and at their workplace.

Road safety

~~12.6.69~~12.6.72 The **Transport Assessment Report (Document Reference 7.13)** sets out accident data for the 5 year period between 2015 and 2019. It shows that, out of the 80 collisions, 87 casualties were involved in slight collisions, 15 serious collisions and four fatalities.

~~12.6.70~~12.6.73 The majority of collisions within the study area have occurred on the M3 Junction 9 roundabout. These have been mainly on the circulatory area involving rear end shunts where drivers have failed to anticipate slowing traffic. Although these are not shown up as clusters within the data, they appear to be related to congestion on the A34 and M3 northbound and the M3 Junction 9 roundabout. Other collisions involve incidents where vehicles have overturned. There are a number of collisions where lane changes have resulted in collisions where drivers have been in the wrong lane to exit the roundabout.

~~12.6.71~~12.6.74 The existing layout creates conflict points for non-motorised users, including a pedestrian facility crossing the carriageway at grade at the M3

5 https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/coronavirusandtraveltowork/june2020#coronavirus-and-travel-to-work

Junction 9 roundabout. This is as a result of insufficient time for pedestrians to complete the full crossing from the inside of the roundabout to the eastern side of the A34 in one go, as well as a lack of maintenance and not being designed for pedestrian use. The refuge does not feature vehicle containment barriers or any form of tactile paving.

~~12.6.72~~12.6.75 Conflicts between cyclists and general traffic exist on the circulatory carriageway at each entry and exit point, although alternative facilities for cyclist are available. Cyclists and pedestrians may come into conflict with each other throughout the extent of the pedestrian, cycle and horse-riding facilities especially on the approaches to subways where paths from different directions merge together.

Neighbourhoods and facilities

~~12.6.73~~12.6.76 The location and type of community facilities, and the severance of communities from such facilities have been outlined in **Table 12.8**. There are a range of facilities within the study area, including recreational (e.g. Winchester Sport & Leisure Park), educational (e.g. St Swithun's School), and green space (e.g. Winnall Moors Nature Reserve). The COVID-19 pandemic has highlighted the importance of provision of green space, as well as the quality and accessibility of this provision.

~~12.6.74~~12.6.77 No healthcare facilities have been identified within the study area. Leigh House hospital, which provides acute adolescent psychiatric services, lies approximately 650m east from the Application Boundary. The Royal Hampshire County Hospital lies approximately 2.5km west within Winchester.

Summary of health profile

~~12.6.75~~12.6.78 **Table 12.20** sets out the distribution of vulnerable groups who could be disproportionately affected by the Scheme, identified through the baseline studies presented above.

Table 12.20: Relevant vulnerable groups

Vulnerable/ Disadvantaged Groups	Prevalence (relationship to national average)
Older people (65 and over)	High - The majority of wards have a higher percentage of people in the 65-85 age bracket, and all wards have higher percentage of 85+ year olds.
Children (under 16)	Medium - The majority of wards have a lower percentage of under 16 year olds.
Those with a high level of deprivation, low income or unemployment	Low - All wards are performing similar or better than regarding deprivation.

Vulnerable/ Disadvantaged Groups	Prevalence (relationship to national average)
Those with pre-existing health conditions, such as obesity	Medium - All wards have similar or better rates on childhood obesity, deaths from respiratory diseases and various other pre-existing health conditions.
Vulnerable road users, including pedestrians and cyclists	High - There are numerous walking, cycling and horse-riding routes within the Application Boundary which are used by the surrounding community.

~~12.6.76~~12.6.79 Based on the baseline information presented above, and the distribution of vulnerable groups within the wards, the overall ward sensitivity is set out in **Table 12.21** below.

Table 12.21: Overall population sensitivity by ward

Ward	Sensitivity
Alresford and Itchen Valley	High
St Bartholomew	High
St Michaels	High
The Worthys	Medium
Upper Meon Valley	Medium

Health determinants

~~12.6.77~~12.6.80 **Table 12.22** outlines the sensitivity of each ward with regards to the health determinants set out in DMRB LA 112. This has been determined based on the distribution of vulnerable groups and overall population sensitivity in each ward (set out above), the baseline information, as well as baseline conditions described in other chapters of the ES (for example, in **Chapter 5 (Air Quality)** of the **ES (Document Reference 6.1)**).

Table 12.22: Sensitivity of study area communities to changes in health determinants

Health determinant	Alresford and Itchen Valley	St Bartholomew	St Michaels	The Worthys	Upper Meon Valley
Community, recreational and education facilities	Medium	Medium	Medium	Medium	Medium
Green/open space	Medium	Low	Low	Medium	High
Healthcare facilities	Low	Low	Low	Low	Low
Transport and connectivity	Medium	Medium	Medium	Medium	Medium
Safety of the existing affected road network	Medium	Medium	Medium	Medium	Medium
Air quality management areas and ambient air quality	Low	High	High	Low	Low
Noise sensitive areas and ambient noise environment	Low	High	High	High	Low
Sources and pathways of potential pollution, including land and water contamination	Low	Medium	Medium	Medium	Low
Landscape amenity	Very High	Medium	Medium	High	Very High

Baseline evolution

~~12.6.78~~12.6.81 **Chapter 15 (Cumulative Effects)** of the **ES (Document Reference 6.1)** provides a full list of schemes which have been identified as being likely to be in operation prior to the construction of the Scheme. Where relevant, these schemes therefore form part of the future baseline scenario and have been taken into account in the assessment of likely significant effects from the Scheme (construction and operation) presented in this chapter.

~~12.6.79~~12.6.82 As noted above, the projection figures indicated that the Winchester City Council area population is expected to increase by 3% or 3,548 people between 2018 and 2023 which is in line with the national average (3%). At the date of opening the new junction the population is estimated to have increased by 4.97% on the base year of 2018.

~~12.6.80~~12.6.83 The transport modelling undertaken for the Scheme suggests that traffic across the modelled network is anticipated to grow by 11% until the Scheme opening year of 2027 (see the **Combined Modelling and Appraisal Report (Document Reference 7.10)**).

12.7 Potential impacts

12.7.1 This section provides an overview of potential impacts from the Scheme during construction and operation on the receptor groups identified within **Section 12.6**, before any embedded or essential mitigation has been incorporated. Mitigation is set out in **Section 12.8** below.

Land use and accessibility

Private property and housing

12.7.2 The potential impacts on residential property and land receptors that would occur, without mitigation, include:

- Temporary or permanent loss of land associated with a residential property
- Temporary change in attribute such as noise environment or sense of tranquillity during construction, or permanent change in such attributes during operation

Community land and assets

12.7.3 Potential impacts on community assets, facilities and land that would occur, without mitigation, include:

- Construction impacts on community land or assets such as temporary diversions to key routes which may influence the accessibility of land / assets

- Operational impacts on community land or assets such as permanent improvements to key routes which may influence the accessibility of the land / assets

- Construction and operational impacts on tourism and recreational facilities within the vicinity of the Scheme, including direct impacts on the receptor as well as indirect impacts (e.g. visual amenity, changes to the accessibility of recreational facilities or perceived effects)

Development land and business

12.7.4 Potential impacts on commercial property and businesses, and land allocated for employment growth that would occur, without mitigation, includes:

- Construction impacts such as temporary diversions to key routes which may influence accessibility

- Operational impacts such as permanent improvements to key routes which may influence accessibility, or additional traffic which may impact their operations

Agricultural land holdings

12.7.5 Potential impacts of the Scheme on agricultural land holdings that would occur, without mitigation, include:

- Temporary and permanent loss of land within the agricultural land holdings

- Construction impacts such as temporary severance impacting accessibility to land

- Operational impacts such as changes in accessibility

Walkers, cyclists, and horse-riders

12.7.6 Potential impacts arising from the Scheme on walking, cycling and horse-riding that would occur, without mitigation, include:

- Construction impacts such as severance of key routes, any diversions required and associated impacts in relation to journey length and amenity

- Operational impacts including any severance or diversions to key routes and the potential for enhancements to the walking, cycling and horse-riding network due to new overbridges and underbridges

Human health

12.7.7 Potential impacts in terms of human health that would occur, without mitigation, include:

- Construction impacts such as temporary changes in air quality, noise and vibration and amenity arising from construction activities and associated vehicle movements
- Construction impacts such as disturbance and stress caused by construction activity
- Operational impacts such as permanent changes in air quality, noise and vibration and amenity arising from operation of the Scheme
- Temporary and permanent impacts on access to community land and assets as a result in changes in severance. This may in turn impact mental health (e.g. mental illness associated with isolation, or mental health benefits associated with access to nature and green space)
- Permanent changes in physical activity (active travel) with consequences for human health
- Temporary and permanent changes in number of road and traffic injuries

12.8 Design, mitigation and enhancement measures

12.8.1 In accordance with DMRB LA 112 (Highways England, 2020), the Scheme has implemented the mitigation hierarchy of avoidance and prevention, reduction, and mitigation.

12.8.2 Mitigation measures incorporated in the design of the Scheme are reported as embedded mitigation in **Chapter 4 (Environmental Assessment Methodology)** of the **ES (Document Reference 6.1)** those relevant to population and human health are included below. This section also outlines essential mitigation required. Essential mitigation is outlined within the **fiEMP (Document Reference 7.3).** Prior to the implementation of mitigation, the Scheme has the potential to have population and human health impacts during construction and operation, both beneficial and adverse.

12.8.3 The **Consultation Report (Document Reference 5.1)** sets out the consultation that has been undertaken with affected landowners, as well as local groups within the area who could be impacted by the proposals. This includes local businesses, Parish Councils and walking, cycling and horse-riding groups. The Consultation Report sets out how the consultation process has influenced the design of the Scheme, taking into consideration comments received through engagement with stakeholders.

Embedded and essential mitigation

Construction (including site preparation)

12.8.4 The Scheme has been designed such that there would be no requirement to demolish any residential properties, commercial buildings or community assets.

12.8.5 Following consultation, the Scheme has been designed to include the following walking, cycling, and horse riding opportunities:

- Retention and improvements to accessibility of the existing NCN 23 through Junction 9
- Provision of a new bridleway link within the design between Easton Lane and Long Walk, improving connectivity within the local PRoW within the SDNP
- Provision of a walking and cycling route between Kings Worthy and Winnall adjacent to the A33. This will connect in with existing PRoW and local routes, including Kings Worthy Footpath 9 and Headbourne Worthy Footpath 749. See **Rights of Way and Access Plans (Document Reference 2.4)**
- Provision of a route to Easton Lane between the Highways Depot so staff can avoid the need to cross the A33
- Incorporation of sufficient width and head room in the subways on Junction 9 to accommodate led horses.

12.8.6 The majority of permanent land take is within agricultural land holdings, and temporary/ permanent rights required on one private residential land. Optioneering exercises undertaken for the Scheme have considered impacts on open land to reduce land take where possible.

12.8.7 The required land take from agricultural land holdings is identified in **Table 12.24**. Advanced warning to agricultural land holdings/ famers would be given to enable them to plan ahead and consider any impacts of field drainage to reduce impacts on crop loss.

12.8.8 The **fiEMP (Document Reference 7.3)** sets out the outline mitigation measures to be undertaken during the construction stage. The fiEMP will be developed into the second iteration EMP (siEMP), a more detailed Environmental Management Plan by the Principal Contractor once the Scheme detailed design has been finalised. Measures include informing local businesses and residents of the proposed works via the Scheme website. A dedicated stakeholder representative would be appointed by the Principal Contractor to maintain the relationship with landowners, occupiers, stakeholders and the local community. Public notices, particularly those relating to comments on Site activity, should be inclusive to all protected groups under the Equalities Act 2010 (i.e. age, disability etc.). This would help to reduce health impacts of stress and anxiety associated with not being able to communicate and be heard.

12.8.9 The Scheme has the potential to cause disruption to local residents, businesses and community facility users during the construction phase. The **Outline Traffic Management Plan (TMP) (Document Reference 7.8)** sets out the temporary traffic management measures during the construction phase of the Scheme. The traffic management strategy ensures two lanes would remain open throughout the construction works and minimises restrictive traffic management

operations to night-time/ off peak hours, and that adequate notification would be provided for any restrictions.

12.8.10 Where access is affected to private properties and businesses, temporary alternative access would be provided as appropriate, to be agreed with the landowner and/or tenant(s) as required. Essential access to private residences, community facilities and businesses would be maintained throughout the construction period, with additional signage provided for key business receptors who require access from the M3 Junction 9, for example those within Winnall Industrial Estate.

12.8.11 Full walking, cycling and horse-riding route closures and associated diversions would be avoided unless absolutely necessary. However, due to the nature of the work required on the M3 Junction 9 gyratory, there would be a diversion required to the NCN 23 as the new gyratory abutments are constructed. From the eastern side of the gyratory, walkers would be diverted northwards along Easton Lane and Long Walk, then south towards Winnall via the Itchen Way. Cyclists and horse riders would be diverted along Easton Lane, then south to Alresford Road.

12.8.12 The **Public Rights of Way Access Plans (Document Reference 2.4)** identifies how the existing PRoW and footpath network would be altered by the Scheme. It identifies that the A34 Southbound PRoW would be permanently lost to facilitate the realignment, however this route would be replaced as part of the Scheme. The plans also show the proposed, improved route for the NCN 23, which aims to address the current severance caused by the existing M3 Junction 9 arrangement.

12.8.13 To mitigate adverse human health effects from dust emissions best practice mitigation would be implemented to control dust emissions from construction works and plant during the construction phase. These mitigation measures would seek to suppress the dust generation rate and also mitigate its dispersion and maximise the use of existing vegetation barriers where practicable. Further information is provided in **Chapter 5 (Air Quality)** of the **ES (Document Reference 6.1)**.

12.8.14 Essential mitigation measures for noise and vibration impacts during the construction phase are outlined in **Chapter 11 (Noise and Vibration)** of the **ES (Document Reference 6.1)**, which includes locating noisy plant and equipment a suitable distance away from noise and vibration sensitive receptors and restricting the number of plant items in use at any one time.

Operation

12.8.15 There are potential health benefits relating to the potential for enhanced active travel and recreational opportunities as a result of the proposed walking, cycling and horse-riding mitigation measures. Once operational, the Scheme would allow for improved highways safety.

12.8.16 To mitigate adverse human health effects from noise impacts associated with the operation of the Scheme, low noise road surfaces are proposed to be embedded as part of the Scheme where new roads surfaces are to be laid. Further information is provided in **Chapter 11 (Noise and Vibration)** of the **ES (Document Reference 6.1)**.

12.8.17 To mitigate adverse human health effects from changes to landscape amenity, new lighting features are restricted to the subways and underpasses (for safety) and on gantries. Further landscape measures would be provided to minimise the visual impact of the Scheme. Further information is provided in **Chapter 7 (Landscape and Visual)** of the **ES (Document Reference 6.1)**.

Enhancement measures

12.8.18 Enhancement is defined by DMRB LA 104 as *"a measure that is over and above what is required to mitigate the adverse effects of a project".*

12.8.19 No enhancements in relation to population and human health are anticipated.

12.9 Assessment of likely significant effects

12.9.1 This section presents the assessment of likely significant effects for construction and operation on population and human health, with consideration given to the embedded and essential mitigation outlined in **Section 12.8.** This section should be read in conjunction with **Appendix 12.1 (Schedule of Population and Human Health Effects)** of the **ES (Document Reference 6.3)**

12.9.2 This assessment draws on the **Combined Modelling and Appraisal Report (Document Reference 7.10)** and an optioneering exercise undertaken for the proposed walking, cycling and horse-riding routes, which all directly inform the assessment of likely significant effects on population and human health. These technical assessments function as assessment evidence bases for the assessment reported in this chapter.

Construction (including site preparation)

Land use and accessibility

Private property and housing

12.9.3 The assessment on private property and housing considers the potential direct impacts (e.g. demolition, severance/ change in access) of residential properties within the Application Boundary, as well as potential indirect impacts on properties within 500m of the Application Boundary. Effects have also been considered with regards to allocated residential development land.

12.9.4 The Scheme has been designed to avoid direct impacts on residential properties where possible, and therefore no demolition of residential properties is proposed as part of the Scheme.

12.9.5 As set out in **Table 12.7**, there is one residential property within the Application Boundary. A total of 0.0213 ha is required from White Hill Cottage. The land is required temporarily during construction, with rights over the land required permanently. Due to the temporary nature of the works, this is therefore defined as a moderate adverse impact, which when combined with the medium sensitivity of this receptor, is identified as a moderate level of effect and therefore Significant.

12.9.6 In relation to private property and housing within the wider study area (500 m from Application Boundary) that may experience indirect effects (e.g. change in environmental attribute such as noise) during construction, it is anticipated that these impacts would be temporary in nature. Management and mitigation measures are set out in the **Outline TMP (Document Reference 7.8)** and the **fiEMP (Document Reference 7.3)**.

12.9.7 Overall, it is anticipated that the temporary impacts during construction activities could result in a discernible change in attributes or environmental quality. It is anticipated that this would result in a minor adverse impact, which when combined with the low sensitivity of these receptors, is identified as a slight level of effect and therefore Not Significant.

12.9.8 As there is no land allocated for residential development within the study area, no significant effects are anticipated on this receptor.

Community land and assets

12.9.9 This section summarises the likely significant effects of the Scheme on community land and assets. The full assessment is set out in **Appendix 12.1 (Schedule of Population and Human Health Effects)** of the **ES (Document Reference 6.3)**.

12.9.10 As noted above, there would be no demolition to any community assets to facilitate the construction of the Scheme.

12.9.11 There would be a total of 0.0058ha of land permanently taken of trees, shrubbery and public footpath west of the M3, which is required for construction of surface water drainage outfall. In addition, approximately 0.0130 ha would be temporarily taken of the River Itchen west of the M3. Both these parcels of land are owned by the Hampshire & Isle of Wight Wildlife Trust. This would primarily result in the loss of habitat rather than open space. The impacts of the proposed development on habitats is assessed within **Chapter 8: Biodiversity** of the **ES (Document Reference 6.1)**. The impacts on public footpaths have been assessed in the walking, cycling and horse-riding section below.

12.9.12 For all other community land and asset receptors listed in **Table 12.8**, these are expected to experience negligible adverse impacts with regards to temporary changes in journey time reliability, resulting in slight levels of effect for all receptors, which is not significant.

12.9.13 Temporary diversions would be required during the construction phase of the Scheme, as set out in the **Outline TMP (Document Reference 7.8).** This may result in a lengthening of journey time for community facility users who are travelling on the M3 and alighting at Junction 9.

12.9.14 Indirect impacts, such as changes in air quality or visual amenity, on community land and assets within the study area would be temporary and intermittent. Measures set out in the **fiEMP (Document Reference 7.3)** would seek to manage and mitigate these impacts.

12.9.15 Overall, with the implementation of traffic management measures, it is not anticipated that the construction phase would result in any significant effects on the community land and asset receptors within the study area.

Development land and businesses

12.9.16 The Scheme has been designed to avoid direct impacts on the commercial properties and businesses, and therefore no demolition of commercial properties is proposed as part of the Scheme.

12.9.17 The **Outline TMP (Document Reference 7.8)** sets out the traffic management and mitigation measures to maintain accessibility throughout the construction phase.

12.9.18 Therefore potential direct effects on development land and businesses during construction are limited to changes in journey time rather than complete severance or loss of access. The full assessment of likely significant effects are set out in **Appendix 12.1 (Schedule of Population and Human Health Effects)** of the **ES (Document Reference 6.3)**.

12.9.19 Overall, the majority of businesses within the study area are anticipated to experience minor impacts, which, combined with medium sensitivity, are considered to be a slight level of effect and therefore not significant. However, it is anticipated that the Winnall Industrial Estate, Tesco Extra and Keir Highways would experience significant effects during construction. These are set out in **Table 12.23**.

Table 12.23: Temporary significant effects on development land and businesses during construction

Receptor	Sensitivity	Impacts	Magnitude	Level of effect
Winnall Industrial Estate including CEMEX	Very high	Temporary change to accessibility of the site in terms of journey time reliability along Easton Lane - the primary access route for the industrial estate. This would impact all users of the employment site.	Moderate adverse	Very Large
Tesco Extra	High	Temporary change to accessibility of the site in terms of journey time	Moderate adverse	Large

Receptor	Sensitivity	Impacts	Magnitude	Level of effect
		reliability along Easton Lane - the primary access route for the industrial estate. This would impact all users of the employment site.		
Kier Highways	Medium	Temporary change to accessibility of the site in terms of journey time reliability from the A34 via M3 Junction 9 - the primary access route for the depot. This would impact all users of the employment site.	Moderate adverse	Moderate

12.9.20 There is no allocated development land within the study area, and therefore the construction of the Scheme is not anticipated to lead to any significant effects in this regard.

Agricultural land holdings

12.9.21 The Scheme would result in the temporary loss of land over the four agricultural land holdings listed in **Table 12.24**. A total of 16.6479ha of land would be temporarily impacted as a result of the construction of Scheme. A total of 32.4874ha of land would be permanently impacted during the operational phase of the Scheme.

12.9.22 The temporary land would be required for compound set up, material storage and haul routes. Severance during construction would be limited through careful siting of construction compounds and lay down areas and planning of construction activities in consultation with the landowners.

12.9.23 Where permanent land take is required, there would be an impact to farm operations. It is anticipated that Itchen Down Farm and Winnall Down Farm would have large areas of land permanently impacted by the Scheme, which would result in a significant effect.

12.9.24 It is anticipated that 0.0201ha would be required from the Dairy House land during the operation of the Scheme, and it is assumed that this would be taken during the construction phase. However it should be noted that the 0.0201ha comprises trees and shrubbery along the M3 south of Martyr Worthy way, rather than operational agricultural land, as shown on **Figure 12.3 (Agricultural Land Holding Receptors)** of the **ES (Document Reference 6.2)**. Similarly, it is anticipated that 0.0178ha would be required from Fulling Mill Estate during the construction phase, however the land to be acquired is comprised of grassland and river (River Itchen) rather than arable field. The land at Fulling Mill Estate is not required during the operational phase and would be returned to the owner.

12.9.25 It is therefore anticipated that these holdings may experience minor disturbance during the construction phase, but would experience limited impacts upon the arable land itself, and is therefore not anticipated to compromise the overall viability of the holdings.

12.9.26 As detailed within the **Consultation Report (Document Reference 5.1)** the Applicant has liaised with affected landowners throughout the development of the Scheme. This has included engagement both within and outside of the formal statutory consultation periods. Formal engagement with affected landowners, in accordance with Section 42(1)(d) of the Planning Act is summarised in **Section 11.2** of the **Consultation Report (Document Reference 5.1)**.

12.9.27 Non-statutory engagement with affected landowners has included reaching access arrangements for intrusive and non-intrusive site investigation works for the purposes of the Scheme and discussions about the potential impacts and mitigation of the Scheme.

12.9.28 **Appendix B** of the **Statement of Reasons (Document Reference 4.1)** submitted with the DCO application further sets out how the Applicant has engaged with affected landowners in relation to compulsory acquisition and temporary possession of land.

Table 12.24: Agricultural Land Holdings temporary and permanently impacted by the Scheme

Name of Farm or Landowner	Area (ha) temporarily impacted	Area (ha) permanently impacted	Sensitivity	Magnitude of Impact	Level of Effect
The Dairy House	-	0.0201	Medium	Minor	Slight
Itchen Down Farm	13.1948	28.6421	Medium	Major	Large
Fulling Mill Estate	0.0178	-	Medium	Minor	Slight
Winnall Down Farm	3.4353	3.8252	Medium	Major	Large

12.9.29 Agricultural land holdings within the wider 500m study area would not experience any loss or alteration of characteristics, features or elements during the construction phase (no change) resulting in a neutral impact and therefore not significant.

Walking, cycling and horse-riding

12.9.30 As noted within **Section 12.7**, there would be temporary closures during the construction phase, with diversions put in place to provide an alternative route for walking, cycling and horse-riding users. The full assessment of likely

significant effects is provided in **Appendix 12.1 (Schedule of Population and Human Health Effects)** of the **ES (Document Reference 6.3)**. **Table 12.25** below summarises the significant effects anticipated during construction.

Table 12.25: Summary of significant construction effects on walking, cycling and horse-riding

Receptor	Sensitivity	Impacts	Magnitude	Level of effect
National Cycle Network Route 23	Very High - the NCN 23 is a national route likely used for both commuting and recreation that records regular use.	Due to the intrusive nature of the works required to construct the new gyratory abutments, there would be a period of time where users would be required to be diverted from the existing route through the gyratory, which would lengthen journey time. From the eastern side of the gyratory, ~~users~~ walkers would be diverted northwards along Easton Lane and Long Walk, then south towards Winnall via the Itchen Way. Cyclists and horse riders would be diverted along Easton Lane, then south to Alresford Road. This represents a temporary change in journey length greater than 500 metres, or a major magnitude of change.	Major adverse	Very Large
Winchester Bridleway 502	Medium – this bridleway follows NCN 23 route connecting Winchester to SDNP and is likely used for recreation that records regular use.	As this bridleway runs along the NCN 23 route, it would experience the same impacts as outlined above.	Major adverse	Large
Winchester Bridleway 520	Medium – this bridleway follows NCN 23 route connecting Winchester to SDNP and is likely used for recreation that	As this bridleway runs along the NCN 23 route, it would experience the same impacts as outlined above.	Major adverse	Large

Receptor	Sensitivity	Impacts	Magnitude	Level of effect
	records regular use.			
A33 Southbound footpath	High – this footpath runs along the existing A33 Southbound alignment and is likely to be used for commuting.	Due to realignment works this route would be lost during construction, although a new route along the proposed realignment would be provided once the Scheme is operational.	Major Adverse	Very Large
Easton Lane footpath	High – this footpath joins the Junction 9 footpath network at Easton Lane and is likely to be used frequently for commuting.	Due to the new gyratory arrangement this route would be lost during construction, although a new route along the proposed realignment would be provided once the Scheme is operational.	Major Adverse	Very Large

12.9.31 It is anticipated that there would be negligible adverse to no change for all other paths and routes that interact with the Application Boundary, including for the South Downs Way and other long-distance footpaths.

12.9.32 ~~For PRoW in the wider study area that do not directly interact with the Scheme, it is anticipated that there would typically be no changes to accessibility or severance during construction, and therefore no temporary or permanent effects~~. For PRoW in the wider 5km study area (see **Figure 12.7 Chapter 12 (Population and Human Health – Figures)** of the **ES (6.2, Rev 2)**), that do not directly interact with either the scheme or PRoW affected by the scheme it is anticipated that there would be no changes to accessibility or severance during construction and therefore no temporary or permanent effects. This is because all paths which do not intersect with the Application Boundary or interact with paths affected are considered to experience no change in accordance with DMRB LA 112 Population and human health (National Highways, 2020) methodology, and no changes to journey length are identified.

Assessment of effects on human health

12.9.33 The assessment of human health considers the sensitivity of the population and changes to health determinants likely to occur as a result of the Scheme, to identify the likely health outcome. The sensitivity of the population within the human health study area has been considered at the ward level and defined in **Table 12-21**. The health determinants are identified in **Section 12.4**

~~12.9.33~~

12.9.34 Where relevant, assessment outcomes from other ES chapters have been considered within the assessment on human health.

12.9.35 **Table 12.31**~~**Table 12.31**~~provides a summary matrix of the health outcomes identified for the Scheme during construction.

Community, recreational, and education facilities

12.9.36 The Scheme has been designed to avoid the demolition or loss of land to any community land and facilities. In addition, it is anticipated that no temporary land take for construction works would take place on community land.

12.9.37 These receptors were considered individually in the community land and assets assessment above. This concluded that these receptors would experience no significant adverse impacts during the construction phase.

12.9.38 The construction phase is not anticipated to significantly inhibit access to community, recreational, and education facilities. There is likely to be temporary increased journey time unreliability due to traffic management measures. However, this would not majorly impact the overall accessibility to facilities.

12.9.39 Construction workers on the Scheme are unlikely to increase pressure on the community, recreational, and education facilities. As discussed above, many of them are likely to reside outside of the human health study area. It is anticipated that these workers would continue to utilise their own local services.

12.9.40 Overall, it is considered that the construction phase of the Scheme would result in a neutral health outcome for those within the human health study areas as result of any impacts on community, recreational, and education facilities.

Green/open space

12.9.41 As noted within the Land Use and Accessibility assessment above, the Scheme would result in the permanent loss of the A34 Southbound PRoW and the Easton Lane PRoW. However, alternate facilities would be provided during construction, and new routes along the new alignment would be provided to directly replace these PRoW.

12.9.42 Temporary diversions would be required for the NCN 23 and Winchester Bridleway 502 as the new gyratory abutments are constructed. Users of the NCN 23 would be diverted northwards along Easton Lane and Long Walk, then south towards Winnall via the Itchen Way, significantly lengthening the journey by over 500m.

12.9.43 The Walking Cycling and Horse-riding assessment detailed **Appendix 12.1 (Schedule of Population and Human Health Effects)** of the **ES (Document Reference 6.3)** demonstrates that there are likely to be significant adverse effects on the NCN 23 and other local footpaths.

12.9.44 This proposed diversion of the NCN 23 and Winchester Bridleway 502 would not limit access to open space. Users of the diverted routes would still benefit from access to the outdoor space these routes traverse and from the National Park as alternate routes are available.

12.9.45 Overall, it is considered that the construction phase of the Scheme would result in a neutral health outcome for the study areas as green/ open space would be remain accessible through alternative routes.

Healthcare facilities

12.9.46 As noted within the baseline, there are no healthcare facilities within the study area. The construction phase is not anticipated to significantly inhibit access to healthcare facilities.

12.9.47 While there is likely to be temporary increased journey time unreliability due to traffic management measures around the Scheme, this would not impact the overall accessibility to healthcare facilities.

12.9.48 Overall, it is considered that the construction phase of the Scheme would result in a neutral health outcome for those within the human health study areas as result of any impacts on healthcare facilities.

Transport and connectivity

12.9.49 The construction of the Scheme would necessitate construction traffic management, temporary diversions, and a reduction in journey time reliability during the construction phase, which is likely to impact all those who use the M3 Junction 9 to access work, services and facilities and for all other trips. This may result in an increase in driver stress. This is anticipated to delay public transport on Easton Lane and the surrounding area.

12.9.50 Yet these impacts are not anticipated to affect the overall provision of public transport services in the wards within the human health study areas and would result in a neutral health outcomes.

12.9.51 As discussed above, the NCN 23 route would be temporarily closed during the construction phase and diverted on surrounding alternate routes. Yet this would not significantly inhibit the overall accessibility of the route or the areas it links.

12.9.52 Overall, it is considered that the construction phase of the Scheme would result in a neutral health outcome for those within the human health study areas as result of any impacts on transport and connectivity.

Safety of the existing road network

12.9.53 The construction phase is likely to introduce additional hazards to road users, including changes to the road layout, the presence of construction vehicles, and potential delays.

12.9.54 The **Outline TMP (Document Reference 7.8)** has been designed to minimise the disruption to road users such that the anticipated impacts of the Scheme would result in a neutral health outcome during the construction phase.

Ambient air quality

12.9.55 **Chapter 5 (Air Quality)** of the **ES (Document Reference 6.1)** sets out the assessment of the construction of the Scheme on air quality, including consideration of construction dust and traffic emissions.

12.9.56 The chapter identifies that properties located within 200m of construction activities have the potential to be adversely affected by construction dust, however with the application of industry best practice mitigation measures, as defined in the **fiEMP (Document Reference 7.3)**, and the short term nature of construction activities, the air quality chapter concludes that effects are not considered to be significant.

12.9.57 Regarding traffic emissions, an increase in vehicle movements is expected to occur during the construction period as a result of workers and heavy goods vehicles (HGVs) travelling to and from site. The chapter notes that areas where changes in traffic flows are likely to go above the DMRB LA 105 (Highways England, 2020) criteria are within the Application Boundary at areas that are not at risk of exceeding the relevant limit values due to the low background concentrations. The chapter concluded that it there is not considered a risk of them resulting in significant air quality impacts at relevant receptor locations.

12.9.58 With consideration of the above, it is therefore concluded that the construction of the Scheme would not result in any temporary or permanent effects, and would therefore result in a neutral health outcome on ambient air quality.

Ambient noise environment

12.9.59 **Chapter 11 (Noise and Vibration)** of the **ES (Document Reference 6.1)** identifies that some residential areas located close to the Scheme are likely to experience temporary moderate significant effects from demolition of the existing gyratory and construction noise and vibration.

12.9.60 This chapter considers magnitude of impacts at a population, rather than an individual level. Therefore, taking into consideration the conclusions of the noise assessment, negative health outcomes have been identified for the wards of St Michaels and St Bartholomew which contain the majority of receptors significantly adversely affected by noise. All other wards are considered to have a neutral health outcome.

Sources and pathways of potential pollution

12.9.61 **Chapter 9 (Geology and Soils)** of the **ES (Document Reference 6.1)** identifies that risks from contamination within the soils or groundwater to affect construction workers and cause health impacts as a result of direct or indirect contact with contaminated materials is likely to be very low. Mitigation measures implemented during construction set out in the **fiEMP (Document Reference 7.3)** is anticipated to reduce risk to construction workers and neighbours to a not significant effect.

12.9.62 The **fiEMP (Document Reference 7.3)** also sets out mitigation measures regarding the control of pollution and silt to manage potential pollution as a result of surface water runoff. A temporary works drainage strategy would be implemented which would incorporate these measures.

12.9.63 With consideration of the above, a neutral health outcome is anticipated with regards to sources and pathways of potential pollution.

Landscape amenity

12.9.64 **Chapter 7 (Landscape and Visual)** of the **ES (Document Reference 6.1)** notes short-term/ reversible changes to the local PRoW network due to diversions and closures are likely to occur during the construction phase. It is also considered that there would be short-term and reversible effects likely to occur from construction activities including movement of plant and machinery fitted with flashing beacons, and the installation and operation of construction compounds (including temporary fencing and lighting). These impacts are likely to be short term, temporary and reversible and significance of effect would reduce with increasing distance from the Application Boundary.

12.9.65 Based on this assessment, there is anticipated to be a neutral health outcome on landscape amenity.

Table 12.26: Summary assessment of construction phase human health outcomes

Health Determinant	Alresford and Itchen Valley		St Bartholomew		St Michaels		The Worthys		Upper Meon Valley	
	Sensitivity	Health Outcome	Sensitivity	Health Outcome	Sensitivity	Health Outcome	Sensitivity	Health Outcome	Sensitivity	Health Outcome
Community, recreational and education facilities	Medium	Neutral	Medium	Neutral	Medium	Neutral	Medium	Neutral	Medium	Neutral
Green/open space	Medium	Neutral	Low	Neutral	Low	Neutral	Medium	Neutral	High	Neutral
Healthcare facilities	Low	Neutral	Low	Neutral	Low	Neutral	Low	Neutral	Low	Neutral
Transport and connectivity	Medium	Neutral	Medium	Neutral	Medium	Neutral	Medium	Neutral	Medium	Neutral
Safety of the existing affected road network	Medium	Neutral	Medium	Neutral	Medium	Neutral	Medium	Neutral	Medium	Neutral
ambient air quality	Low	Neutral	High	Neutral	High	Neutral	Low	Neutral	Low	Neutral
Ambient noise environment	Low	Neutral	High	Negative	High	Negative	Low	Neutral	Low	Neutral
Sources and pathways of potential pollution	Low	Neutral	Medium	Neutral	Medium	Neutral	Low	Neutral	Low	Neutral
Landscape amenity	High	Neutral	Medium	Neutral	Medium	Neutral	High	Neutral	High	Neutral

Operation

Land use and accessibility

Private property and housing

12.9.66 **Table 12.27** sets out the potential direct effects on private property and housing during operation of the Scheme.

12.9.67 White Hill Cottage is anticipated to experience minor adverse impacts during the operational phase as there is a requirement to have a permanent right to cross the land, for the purposes of maintaining an electricity cable. It is anticipated that, for business as usual, there would be no need to access the land and therefore there would be limited impacts. However, there may be an occasional need to inspect or perform maintenance on the electricity cable, which may result in temporary disruption and disturbance to the occupiers. This would result in a slight adverse level of effect.

Table 12.27: Effects on private residential properties during operation

Receptor	Sensitivity	Potential Impact(s)	Magnitude	Level of Effect
White Hill Cottage	Medium	Permanent right to cross the land and maintain electricity cable	Minor adverse	Slight

12.9.68 Regarding private property and housing within the wider study area (500 m from the Application Boundary), it is anticipated that properties may experience indirect impacts such as amenity effects. These are described in **Chapter 5 (Air Quality)**, **Chapter 7 (Landscape and Visual)**, and **Chapter 11 (Noise and Vibration)** of the **ES (Document Reference 6.1)**. Impacts relevant to human health are presented later in this section.

Community land and assets

12.9.69 None of the identified community assets would be directly affected during operation of the scheme with impacts associated with land take having occurred during the construction stage.

12.9.70 The **Transport Assessment Report (Document Reference 7.13)** identified that, as a result of the operational Scheme, there would be a clear journey time improvement with the introduction of the Scheme. This would provide a minor benefit to those accessing these facilities through a reduction in journey times for those who use the Scheme.

12.9.71 In addition, the Scheme would be providing new linkages throughout the Scheme which would help to improve accessibility to local community lands and services through active travel. The Scheme would provide lighting in the underpasses and subways to maintain safety and discourage antisocial behaviour, which would help to encourage uptake of sustainable modes of transport. The associated impacts on human health are assessed later in this section.

12.9.72 **Chapter 7 (Landscape and Visual)** of the **ES (Document Reference 6.1)** sets out the proposed mitigation which seeks to minimise the visibility of the Scheme, as well as creation of new habitat within the Application Boundary to maximise biodiversity benefit. This includes new woodland and scrub/ shrub planting along the new alignment and creation of chalk grassland. This would provide negligible beneficial impacts with regards to the visual amenity and enjoyment of community land in the study area.

12.9.73 No significant impacts are anticipated on community land and assets within the study area.

Development land and businesses

12.9.74 **Table 12.28** summarises the potential significant effects on development land and business during operation of the Scheme. It is anticipated that Winnall Industrial Estate would experience a moderate beneficial impact which is a significant effect during operation. The full assessment is provided in **Appendix 12.1 (Schedule of Population and Human Health Effects)** of the **ES (Document Reference 6.3)**. The **Combined Modelling and Appraisal Report (Document Reference 7.10)** sets out the wider economic benefits of the Scheme.

Table 12.28: Effects on development land and businesses during operation

Receptor	Sensitivity	Magnitude and Nature of Effect	Level of effect
Winnall Industrial Estate including CEMEX	Very high - this is an existing employment area covering more than five hectares.	Minor beneficial - permanent change to accessibility of the employment site in terms of a reduction in journey times for those who are accessing the site via M3 Junction 9. Given the proximity of this receptor to the junction, this is likely to make up a substantial proportion of its users.	Moderate beneficial

12.9.75 The operation of the Scheme would result in permanent improvement to accessibility to development land and businesses within the area in terms of a

reduction in journey time for those who are accessing commercial buildings via the M3 Junction 9.

Agricultural land holdings

12.9.76 All permanent land loss from agricultural land holdings would occur during the construction phase and is reported in **Table 12.24** above.

12.9.77 It is anticipated that there would be no severance of land with no access, it is therefore considered that there would be no significant effects regarding severance effects on agricultural land holdings during operation.

12.9.78 Agricultural holdings within the wider 500m study area would experience no loss or alteration of characteristics, features, elements or accessibility during operation, resulting in no change. When combined with their low sensitivity would lead to a neutral effect.

Walking, cycling and horse-riding

12.9.79 The full assessment of likely significant effects is provided in **Appendix 12.1 (Schedule of Population and Human Health Effects)** of the **ES (Document Reference 6.3)**. **Table 12.29** summarises the significant effects anticipated during operation. There is anticipated to be beneficial significant effects on NCN 23, and Winchester Bridleways 502 and 520.

12.9.80 The majority of PRoW are not anticipated to be impacted by the proposals, with no changes to alignment, accessibility or journey times for users of these routes.

Table 12.29: Summary of significant effects on walking, cycling and horse-riding during operation

Receptor	Sensitivity	Impacts	Magnitude	Level of effect
National Cycle Network Route 23	Very High - the NCN 23 is a national route likely used for both commuting and recreation that records regular use.	NCN 23 /Winchester Bridleways 502 and 520 would be permanently altered to improve walking, cycling and other access beneath/around M3 Junction 9. The route that interacts with Junction 9 would be realigned to improve accessibility and safety, reducing the severance created by the current Junction 9 alignment.	Moderate beneficial	Large

Receptor	Sensitivity	Impacts	Magnitude	Level of effect
Winchester Bridleway 502	Medium – this bridleway follows NCN 23 route connecting Winchester to SDNP and is likely used for recreation that records regular use.	NCN 23 /Winchester Bridleways 502 and 520 would be permanently altered to improve walking, cycling and other access beneath/around M3 Junction 9	Moderate beneficial	Moderate
Winchester Bridleway 520	Medium – this bridleway follows NCN 23 route connecting Winchester to SDNP and is likely used for recreation that records regular use.	NCN 23 /Winchester Bridleways 502 and 520 would be permanently altered to improve walking, cycling and other access beneath/around M3 Junction 9	Moderate beneficial	Moderate
A33 Southbound footpath	High –runs along the existing A33 Southbound alignment and is likely to be used frequently for commuting. It requires crossing the gyratory and therefore creates an unpleasant walking environment and potential safety concerns for pedestrians.	The Scheme will provide a new footpath along the new alignment to provide this function, which will be safer and provide a more attractive walking environment than the existing arrangement.	Moderate beneficial	Moderate

12.9.81 As set out above, the Scheme has incorporated various proposals that aim to improve the accessibility and connectivity across the PRoW, including upgrades to the existing PRoW that cross Junction 9, including the NCN 23, and provision of safe walking routes along the length of the road used for recreation and commuting.

12.9.82 Through the Scheme, the existing severance between Winchester and the SDNP, created by the current M3 Junction 9 alignment, would be addressed, with improved, safe facilities to access open and recreational space.

Assessment of effects on human health

12.9.83 **Table 12.31** provides a summary matrix of the health outcomes identified for the Scheme during operation. The outcome categories are positive, neutral, negative and uncertain, in accordance with DMRB LA 112.

Community, recreational and education facilities

12.9.84 During its operational phase, the Scheme is anticipated to enhance the accessibility of community, recreational, and education facilities due to reduced congestion and greater journey time reliability. It is also anticipated to take traffic away from local roads in Winchester City set out in the **Combined Modelling and Appraisal Report (Document Reference 7.10)**.

12.9.85 Greater connectivity and accessibility are associated with higher or increased physical activity among the general population, higher or increased social engagement and mobility among older adults, and higher or improved mental health.

12.9.86 This improved accessibility is likely to result in a positive health outcome.

Green/open space

12.9.87 As described by the walking, cycling and horse-riding assessment section above, the Scheme would deliver improvements to the path network in the human health study area in terms of accessibility. This would make it easier for the population to access green/open space, including the SDNP.

12.9.88 These improvements would increase the accessibility of green/open space and would therefore result in a positive health outcome with regards to green/open space during the operational phase.

Healthcare facilities

12.9.89 As the Scheme is anticipated to improve accessibility to local facilities and services due to reduced congestion and journey time, it is anticipated that result in a positive health outcome for those wishing to access healthcare facilities within the study area, for example the elderly or those in poor health. The community land and assets assessment above identified a positive impact to Leigh House Hospital.

Transport and connectivity

12.9.90 The Scheme would deliver improvements to the existing path and active travel network in the human health study area in terms of accessibility, as well as deliver walking, cycling and horse-riding facilities.

12.9.91 As set out in **Section 12.9**, the NCN 23 is being retained, with improvements proposed to the existing walking and cycling route which links both parts of Easton Lane. A new 3m wide combined footway and cycleway for the western

side of the Scheme is proposed to link the A33 / B3047 Junction to Tesco's situated on Easton Lane. A new cycle and footbridge over the River Itchen with the route extending south along the east of the new A34 alignment.

12.9.92 While these improvements would improve the journey quality for pedestrians and cyclists, it is not considered likely to increase the overall number of active travel journeys. However, it is considered that this would increase recreational use, for example use of the improve NCN 23 cycle path, and there would result in a positive health outcome.

Safety of the existing affected road network

12.9.93 The **Transport Assessment Report (Document Reference 7.13)** contains an assessment of accident rates over a 60-year period from the Scheme's opening date. The results of this are summarised by **Table 12.30.**

Table 12.30: Accident impacts over a 60-year appraisal period

Area of Influence	Reduction in number of accidents	Casualties reduction – fatal	Casualties reduction - serious	Casualties reduction - slight
Immediate area of influence: links only	430	7	47	603
Immediate area of influence: junctions only	35	-2	-17	33
Wider area of influence: links and junctions	146	2	23	162
Total	**611**	**7**	**53**	**798**

12.9.94 The accident assessment indicated an overall reduction in accidents and casualties. This shows a reduction of 611 accidents with the Scheme in place compared to without. This includes a reduction in 798 slight casualties, 53 serious, and 7 fatal casualties.

12.9.95 The Scheme proposes to improve the connectivity and accessibility of existing PRoW. Furthermore, the proposed footway/ cycleway to link the A33 / B3047 Junction to Tesco's situated on Easton Lane would avoid the need for people to cross Easton Lane at grade. This would help to improve the safety of the road network for non-motorised users.

Ambient air quality

12.9.96 **Chapter 5 (Air Quality)** of the **ES (Document Reference 6.1)** identifies that, in the Scheme's opening year (2027), the Scheme results in both increases and decreases in the annual average NO_2 concentrations at receptor locations, with the majority of decreases occurring within Winchester City Centre and increases

occurring in proximity to the M3 and Easton Lane (and adjoining roads) due to predicted increase on traffic flows on these routes.

12.9.97 Where an increase in concentration is anticipated, the total predicated annual average NO_2 concentrations is not predicted to exceed the air quality threshold. In accordance with DMRB LA 105 (Highways England, 2019) the Scheme is not predicted to result in a significant effect on Air Quality.

12.9.98 The changes in annual mean PM_{10} concentrations are classified as imperceptible at all except for 6 receptors, however overall concentrations are less than 20 µg/m^3 and therefore not considered to be significant in accordance with the DMRB LA 105 (Highways England, 2020) methodology.

12.9.99 The chapter therefore concludes that the Scheme is not predicted to result in a significant effect on Air Quality. In consideration of this, it is anticipated that changes in particulate concentrations are likely to have a neutral health outcome in all study areas.

Ambient noise environment

12.9.100 **Chapter 11 (Noise and Vibration)** of the **ES (Document Reference 6.1)** identifies that short term significant adverse effects are anticipated at 20 dwellings based on the magnitude of impact in the short-term (i.e. minor), sensitivity of dwellings (i.e. high) and exposure to absolute sound levels above the Significant Observed Adverse Effect Level (SOAEL) (see **Chapter 11 (Noise and Vibration)** of the **ES (Document Reference 6.1)** for further details). Of these, none are anticipated to be directly related to traffic using the Scheme, and 20 are anticipated to be indirectly related to the Scheme. These indirectly affected dwellings are anticipated to experience an increase in traffic flows on the surrounding road network, as a result of the Scheme. In the long-term, these effects are not considered to be significant, as the impact in the long-term is negligible, and where minor noise increases are anticipated at night, the absolute sound level at the receptor is below the SOAEL.

12.9.101 Long-term significant adverse effects are not anticipated at any dwellings, as there are no dwellings which are anticipated to experience minor noise increases or decreases.

12.9.102 There is anticipated to be negligible increases in noise levels within Noise Important Areas, which is therefore considered to be not significant.

12.9.103 The chapter concludes that significant effects during operation are not anticipated. In consideration of this, it is anticipated that the scheme is likely to have a neutral health outcome on ambient noise environment all study areas.

Sources and pathways of potential pollution

12.9.104 **Chapter 9 (Geology and Soils)** of the **ES (Document Reference 6.2)** identifies that there is potential for new contaminants to enter the environment as a result of spills during ongoing routine use of the motorway, together with major

accidents has the potential to affect end users (low sensitivity) and maintenance workers (high sensitivity) through exposure to fuels and oils etc.

12.9.105 The chapter concluded that, with the implementation of the mitigation measures within the design outlined in the chapter and in the **fiEMP (Document Reference 7.3)**, the magnitude of impact is considered to be negligible to the receptors, resulting in slight adverse effects which are not significant.

12.9.106 In consideration of this, there is anticipated to be a neutral health outcome across the study areas.

Landscape amenity (including light)

12.9.107 **Chapter 7 (Landscape and Visual)** of the **ES (Document Reference 6.1)** identifies beneficial long term and permanent operational effects from the changes to the PRoW network, which addresses issues identified in published landscape character assessments relating to severance/ separation between Winchester and the SDNP. The chapter identified that there would also be negative effects arising from illumination of the culverted PRoW underpasses, including on visual receptors on a PRoW. However, when taking a population approach, on balance there is anticipated to be a neutral health outcome.

Table 12.31: Summary assessment of operational phase human health outcomes

Health Determinant	Alresford and Itchen Valley		St Bartholomew		St Michaels		The Worthys		Upper Meon Valley	
	Sensitivity	Health Outcome	Sensitivity	Health Outcome	Sensitivity	Health Outcome	Sensitivity	Health Outcome	Sensitivity	Health Outcome
Community, recreational and education facilities	Medium	Positive	Medium	Positive	Medium	Positive	Medium	Positive	Medium	Positive
Green/open space	Medium	Positive	Low	Positive	Low	Positive	Medium	Positive	High	Positive
Healthcare facilities	Low	Positive	Low	Positive	Low	Positive	Low	Positive	Low	Positive
Transport and connectivity	Medium	Positive	Medium	Positive	Medium	Positive	Medium	Positive	Medium	Positive
Safety of the existing affected road network	Medium	Positive	Medium	Positive	Medium	Positive	Medium	Positive	Medium	Positive
Ambient air quality	Low	Neutral	High	Neutral	High	Neutral	Low	Neutral	Low	Neutral
Ambient noise environment	Low	Neutral	High	Neutral	High	Neutral	Low	Neutral	Low	Neutral
Sources and pathways of potential pollution	Low	Neutral	Medium	Neutral	Medium	Neutral	Low	Neutral	Low	Neutral
Landscape amenity	High	Neutral	Medium	Neutral	Medium	Neutral	High	Neutral	High	Neutral

12.10 Monitoring

12.10.1 With regards to land use and accessibility during construction, the **Outline TMP (Document Reference 7.8)** notes that the Outline TMP is monitored and reviewed by the Scheme Traffic Management Manager. The Outline TMP is a live document to be updated regularly, and will review road performance and help identify opportunities to mitigate any issues relating to the Scheme.

12.10.2 No further monitoring measures are required in relation to human health. Recommendations for monitoring are made in other relevant assessments where required.

12.11 Summary

12.11.1 This chapter presents the findings from the assessment of potential effects from construction and operation of the Scheme on population and human health, which has been undertaken in accordance with DMRB LA 112 Population and Health (Highways England, 2020).

Land use and accessibility

12.11.2 Data collection has included a desk study and a range of consultations undertaken between 2019 and 2022. A number of receptors have been identified within the Study Area, including private property and housing, community land and assets, development land and businesses, agricultural land holdings, and walking, cycling, and horse-riding routes.

12.11.3 Key potential impacts from construction and operation of the Scheme that could relate to these receptors include: land take, changes to accessibility and introduction or removal of severance, or changes in attributes such as environmental conditions.

12.11.4 Mitigation for potential adverse impacts on these receptors have been identified where necessary, including the avoidance of any demolition of existing buildings, reducing permanent land take where possible, and provision of alternative routes/ diversions to maintain accessibility.

12.11.5 Embedded mitigation measures include the improvement of accessibility of key routes that cross the Scheme, for example the improvements to the National Cycle Network 23.

12.11.6 The assessment identifies a number of adverse and beneficial impacts to these receptors. Significant effects are summarised in **Table 12.32** below.

Table 12.32: Land use and accessibility summary of significant effects

Element	Level of Effect during Construction	Level of Effect during Operation
Private property and housing	White Hill Cottage – Moderate Adverse	None identified
Community land and assets	None identified	None identified
Development Land and Business	Winnall Industrial Estate including CEMEX – Very Large Adverse Tesco Extra - Large Adverse Kier Highways - Moderate Adverse	Winnall Industrial Estate including CEMEX – Moderate Beneficial
Agricultural land holdings	Itchen Down Farm - Large Adverse Winnall Down Farm - Large Adverse	None identified
Walking, cycling and horse-riding	National Cycle Network Route 23 - Very Large Adverse Winchester Bridleway 502 - Large Adverse Winchester Bridleway 520 - Large Adverse A33 Southbound footpath - Very Large Adverse Easton Lane footpath - Very Large Adverse	National Cycle Network Route 23 - Large Beneficial Winchester Bridleway 502 – Moderate Beneficial Winchester Bridleway 520 – Moderate Beneficial

Human health

12.11.7 The baseline studies identified that the populations within and around the Application Boundary performs better than the national average in terms of life expectancy, living with a long-term illness or disability, childhood obesity, emergency hospital admissions for heart disease, heart attack, stroke, Chronic Obstructive Pulmonary Disease, incidence of all cancers and deaths from respiratory diseases. The area performs overall significantly better than the national average with regards to income deprivation, child poverty and older people in deprivation.

12.11.8 Key potential impacts from construction and operation of the Scheme that could impact human health include: changes in air quality, noise and vibration, and visual amenity, disturbance and stress caused by construction activity, changes to accessibility to open space or facilities and services, and changes in physical activity levels.

12.11.9 A range of health determinants were identified as being relevant to the Scheme. These included: community, recreational and education facilities, green/open space, healthcare facilities, transport and connectivity, safety of the existing

affected road network, ambient air quality, ambient noise environment, sources and pathways of potential pollution and landscape amenity.

12.11.10 Identified mitigation includes maintaining access where possible, including through provision of alternative route or diversion during construction, managing traffic to reduce disruption, and implementation of good practice to control dust emissions and noise and vibration impacts.

12.11.11 During construction, the majority of the health outcomes on the identified health determinants were identified as neutral, with the exception of negative outcomes anticipated for ambient noise environment within two wards (St Bartholomew and St Michaels) in which the Scheme is located.

12.11.12 During operation, there are a range of positive and neutral effects identified on all health determinants. No negative health outcomes were identified.