

A428 Black Cat to Caxton Gibbet improvements

TR010044

Volume 6

6.1 Environmental Statement

Chapter 12: Population and Human Health

Planning Act 2008

Regulation 5(2)(a)

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

26 February 2021

Infrastructure Planning

Planning Act 2008

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

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Chapter 12: Population and Human Health

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12 Population and human health

12.1 Competent expert evidence

- 12.1.1 This chapter presents the results of an assessment of the likely significant effects of the Scheme on population and human health, which focuses on land-use accessibility and human health.
- 12.1.2 The competent expert responsible for the assessment is a Regional Director with AECOM who holds the qualification of Masters in Economics, and is a Member of the Institute of Economic Development.
- 12.1.3 They have 20 years of experience in the co-ordination, management, delivery and review of population and human health environmental impact assessments (EIAs) for a wide variety of development projects. They have previously authored and reviewed population and human health assessments on strategic and local road-based projects throughout the UK. They have also provided expert witness support on the population and human health topic for several Development Consents Order (DCO) Highways England schemes.

12.2 Legislative and policy framework

- 12.2.1 The following legislation and planning policy are of direct relevance to population and human health and have been considered as part of the assessment.
- 12.2.2 Compliance with statute and policy relating to population and human health is addressed within the Case for the Scheme [TR010044/APP/7.1].

Legislation

Localism Act 2011

- 12.2.3 The *Localism Act 2011* (Ref 12-1) sets out a series of measures with the potential to achieve a substantial shift in power away from central government towards local communities.
- 12.2.4 Effects on local communities resulting from the Scheme have been identified and evaluated as a part of this assessment.

Commons Registration Act 1965

- 12.2.5 The *Commons Registration Act 1965* (Ref 12-2) created a system for the registration and protection of Common Land and Town and Village Greens.
- 12.2.6 The assessment has considered the potential of the Scheme on such areas and their users.

Countryside and Rights of Way Act 2000

- 12.2.7 The *Countryside and Rights of Way Act 2000* (Ref 12-3) is the principal legislation governing the registration and protection of public footpaths, bridleways and byways, and provides measures to improve public access to the open countryside and Common Land.

- 12.2.8 The potential effects of the Scheme on walkers, cyclists and horse riders (WCHs) travelling on these routes have been considered as part of the assessment.

Health and Social Care Act 2012

- 12.2.9 In terms of human health legislation, the *Health and Social Care Act 2012* (Ref 12-4) outlines the Secretary of State's duty to promote and improve the National Health Service (NHS), in pursuit of several key aims, which include:
- An improvement in the quality of services.
 - A reduction in health inequalities.
 - The promotion of autonomy for general practitioners and health centres.
 - Improvements to the treatments and services offered to patients.
- 12.2.10 The legislation focuses on the regulation of the NHS at a national and local level. It also promotes changes such as the abolition of NHS Trusts, support for the production of *Joint Strategic Needs Assessments (JSNAs)* and establishment of Health and Well-being boards at a local authority level. These boards were established for the purpose of advancing the health and wellbeing of people within each local authority area and will aim to “*encourage persons who arrange for the provision of any health or social care services in that area to work in an integrated manner.*”
- 12.2.11 Effects on human health have been considered as part of the assessment.
- National policy**
- National Policy Statement for National Networks*
- 12.2.12 The *National Policy Statement for National Networks* (NPSNN) (Ref 12-5) does not provide specific guidance on the identification, assessment and mitigation of effects on population and human health as a topic area, but does include statements relating to journeys made on the national road network, effects on communities and accessibility, and the need to consider land use impacts as part of development applications for nationally significant infrastructure projects.
- 12.2.13 The NPSNN (Ref 12-5) sets out a number of development-related expectations regarding communities and accessibility, including:
- The delivery of improvements that reduce community severance, particularly where the national road network acts as a barrier to the movement of WCHs.
 - Taking account of the accessibility needs of WCHs as part of the design-development process.
 - Addressing historic problems on the road network.
 - Minimising, where possible, the impacts of developments on the amenity of local communities.
- 12.2.14 The NPSNN states that existing and proposed land uses should be identified as part of development applications, and includes statements concerning the development and/or loss of open space, sports and recreational buildings and land.

- 12.2.15 These considerations have been taken into account in the assessment through activities including the identification, assessment and evaluation of existing land uses, the movements of walkers, cyclists and horse riders (WCH), relevant health data and statistics, and the outcomes of related assessments – for example noise and vibration.

Overarching National Policy Statement for Energy (EN-1)

- 12.2.16 The *Overarching National Policy Statement for Energy (EN-1)* (Ref 12-6) sets out the Government's policy on energy and infrastructure development.
- 12.2.17 In relation to population and human health, EN-1 (Ref 12-6) states that the decision-making process needs to take into account the environmental, social and economic benefits and adverse impacts of developments at the national, regional and local levels. It further states that the potential to impact on the health and well-being of the population should also be considered, including: the direct impacts on health including those associated with increased traffic, air and water pollution, dust, hazardous waste and substances, and noise; and the indirect impacts relating to access to key public services, transport, and the use of open space for recreation and physical activity.
- 12.2.18 The requirements of EN-1 (Ref 12-6) associated with the gas pipeline diversion within the Scheme have been accounted for in the assessment, in the manner described in paragraph 12.2.15.

National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4)

- 12.2.19 The *National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4)* (Ref 12-7) relates to gas supply and gas and oil pipelines and sits under EN-1 (Ref 12-6).
- 12.2.20 Although EN-4 (Ref 12-7) does not set out specific requirements relating to population and human health associated with pipelines, it does state that relevant constraints to such development – for example proximity to community receptors such as schools and hospitals – should be considered. Aspects relating to noise and vibration, and air quality, are also relevant in relation to human health impacts.
- 12.2.21 Information of relevance to the assessment within EN-4 (Ref 12-7) associated with the gas pipeline diversion within the Scheme have been accounted for in the assessment, in the manner described in paragraph 12.2.15.

National Planning Policy Framework

- 12.2.22 The *National Planning Policy Framework (NPPF)* (Ref 12-8) contains policies that are applicable to both motorised travellers and WCHs, and community and private assets.

- 12.2.23 Section 8 of the *NPPF* (Ref 12-8) refers to promoting healthy and safe communities, setting out the need for planning policies to promote healthy, inclusive and safe places. This includes provision of social, recreational and cultural facilities which the community needs. It recognises the importance of high-quality open spaces and opportunities for sport for the health and wellbeing of communities, and calls for planning policies to be based on robust assessments of such provision. Additionally, it states that planning policies should enhance public rights of way (PRoW) and access, including provision of better facilities for users.
- 12.2.24 Section 9 of the *NPPF* (Ref 12-8) focuses on promoting sustainable transport. It emphasises the need to identify opportunities for walking, cycling and public transport use from the early stages of development proposals. It states planning policies should provide for walking and cycling facilities, and encourage sustainable transport solutions.
- 12.2.25 The requirements of the *NPPF* (Ref 12-8) have been accounted for in the assessment, with particular regard given to establishing the effects of the Scheme on land uses, and identifying opportunities to improve facilities for walkers, cyclists and horse-riders (WCH) and accessibility to community facilities through the design-development process, where practicable.

Planning Practice Guidance

- 12.2.26 Planning Practice Guidance (PPG) for *Healthy and safe communities* (Ref 12-9) adds further context to the *NPPF* (Ref 12-8) by providing guidance on health and wellbeing in planning. It covers: the role of health and wellbeing in planning; the links between health, wellbeing and planning; and details how health infrastructure should be considered in planning decisions.
- 12.2.27 PPG for *Open space, sports and recreation facilities, public rights of way and local green space* (Ref 12-10) also adds context to the *NPPF* (Ref 12-8) in relation to how such facilities should be considered when planning new development, and when new development might affect existing facilities.
- 12.2.28 Both PPGs (Ref 12-9; Ref 12-10) have been considered in the assessment by establishing all areas of community land and facilities, and the movements made by WCH on the PRoW and local road network (and any associated amenity value), that would be affected or improved as a result of the Scheme.

National strategies

Highways England Delivery plan 2020 – 2025

- 12.2.29 *Highways England's Delivery Plan 2020 – 2025* (Ref 12-11) sets out a number of Key Performance Indicators (KPIs) including: the number killed or seriously injured on the Strategic Road Network (SRN); delivery of better environmental outcomes including noise and air quality; and meeting the needs of all users of the SRN (including WCH).

- 12.2.30 The plan (Ref 12-11) also sets out Highways England's commitments for improving integration and accessibility through the network including the commitment to work with local communities, to listen to local people to identify how to improve the physical or environmental quality of a place, or the economic or social-wellbeing of a community.
- 12.2.31 Highways England's KPIs and commitments have been considered as part of the assessment of effects and the identification and development of mitigation measures.

Public Health England Strategy 2020 to 2025

- 12.2.32 Public Health England's (PHE) purpose is to protect and improve the nation's health and reduce health inequalities. PHE aims to keep people safe, prevent poor health, narrow the health gap and support a strong economy.
- 12.2.33 The *Public Health England Strategy 2020 to 2025* (Ref 12-12) lays out PHE's priorities over the next five years, and outlines ten priorities including working towards cleaner air in England.
- 12.2.34 Relevant opportunities for creating healthy communities and air quality priorities contained within the strategy (Ref 12-12) have been reviewed as part of the assessment of effects on human health.

Local policy and strategies

Bedford Borough Council

- 12.2.35 The *Bedford Borough Local Plan 2030* (Ref 12-13) was adopted by Bedford Borough Council on 15 January 2020 and contains the following policies of relevance to the assessment:
- Policy S2 – Healthy communities.
 - Policy 7S – Development in the countryside.
 - Policy 29 – Design quality and principles.
 - Policy 31 – The impact of development – access impacts.
 - Policy 32 – The impact of development – disturbance and pollution impacts.
 - Policy 33 – The impact of development – infrastructure impacts.
 - Policy 47S – Pollution, disturbance and contaminated land.
 - Policy 53 – Development layout and accessibility.
 - Policy 88 – Impact of transport on people, places and environment.
 - Policy 91 – Access to the countryside.

12.2.36 Bedford Borough's Health and Wellbeing Board, working alongside councillors, the NHS and public health, adult social care and children's services, aims to enable residents within Bedford to live healthy and independent lives in strong and safe communities. The *Bedford Joint Health and Wellbeing Strategy 2018 – 2023* (Ref 12-14) sets out Bedford's key health and wellbeing priorities for 2018 – 2023. A key relevant priority is to empower residents to create strong, safe and healthy communities. This will be achieved by promoting the use of green and open space, as well as activities such as walking and cycling. Additionally, appropriate steps will be undertaken to understand the local impact of air pollution and protect the health of the borough's most vulnerable residents.

Central Bedfordshire Council

12.2.37 As part of its Local Development Framework, Central Bedfordshire Council adopted the *Core Strategy and Development Management Policies* (Ref 12-15) on 19 November 2009. The following policies are of relevance to the assessment:

- a. Policy CS3 – Healthy and Sustainable Communities.
- b. Policy CS4 – Linking Communities – Accessibility and transport.
- c. Policy CS11 – Rural Economy and Tourism.
- d. Policy CS14 – High Quality Development.
- e. Policy CS17 – Green Infrastructure.
- f. Policy DM3 – High Quality Development.
- g. Policy DM16 – Green Infrastructure.

12.2.38 The *Central Bedfordshire Pre-submission Local Plan 2015 – 2035* (Ref 12-16) comprises Central Bedfordshire Council's draft local plan (dated January 2018) and is currently being examined by the Secretary of State. The following draft policies are of relevance to the assessment:

- a. Policy T1 – Mitigation of Transport Impacts on the Network.
- b. Policy T2 – Highway Safety & Design.
- c. Policy EE1 – Green Infrastructure.
- d. Policy EE12 – Public Rights of Way.
- e. Policy HQ1 – High Quality Development.

12.2.39 The *Central Bedfordshire Bedford Health and Wellbeing Strategy 2018 – 2023* (Ref 12-17) sets out Central Bedfordshire's key health and wellbeing priorities for 2018 – 2023. These include enabling people to optimise their own and their family's health and wellbeing, as well as ensuring that growth delivers improvements in health and wellbeing for current and future residents. To achieve its priorities, Central Bedfordshire Council will work with agencies involved in the planning and delivery of growth to ensure that health and wellbeing are 'hard-wired' into new developments. This will include delivering access to good quality green space, as well as infrastructure that will support walking and cycling and link new homes to existing communities.

Huntingdonshire District Council

- 12.2.40 *Huntingdonshire's Local Plan to 2036* (Ref 12-18) was adopted by Huntingdonshire District Council on 15 May 2019 and contains the following policies of relevance to the assessment:
- a. LP 3 – Green Infrastructure.
 - b. LP 10 – The Countryside.
 - c. LP 12 – Design Implementation.
 - d. LP 14 – Amenity.
 - e. LP 16 – Sustainable Travel.
 - f. LP 29 – Health Impact Assessment.
 - g. LP 36 – Air Quality.

South Cambridgeshire District Council

- 12.2.41 The *South Cambridgeshire Local Plan 2018* (Ref 12-19) was adopted by South Cambridgeshire District Council on 27 September 2018 and contains the following policies of relevance to the assessment:
- a. Policy HQ/1 – Design Principles.
 - b. Policy NH/6 – Green Infrastructure.
 - c. Policy SC/2 – Health Impact Assessment.
 - d. Policy SC/10 – Noise Pollution.
 - e. Policy SC/12 – Air Quality.
 - f. Policy SC/14 – Odour and Other Fugitive Emissions to Air.
 - g. Policy TI/2 – Planning for Sustainable Travel.
- 12.2.42 The *South Cambridgeshire Health Impact Assessment Supplementary Planning Document* (Ref 12-20) was adopted to support previously adopted Development Plan Documents that have been superseded by the *South Cambridgeshire Local Plan 2018* (Ref 12-19). Adopted in 2011, this document remains a material consideration when making planning decisions and although targeted at Health Impact Assessments (HIAs), the guidance is relevant to the assessment of health effects within Population and Human Health chapters.
- ## 12.3 Assessment methodology
- ### Scope of the assessment
- 12.3.1 A scoping exercise was undertaken in mid-2019 to identify the matters to be covered by the population and human health assessment and agree the approach with relevant statutory bodies.
- 12.3.2 The assessment scope was established at that time by comparing available design and land take details for the Scheme with data, information and records relating to WCH, motorised travellers, community facilities, land use and development plans, and human health.

- 12.3.3 The scoping exercise was informed by the technical and reporting guidance contained in the Design Manual for Roads and Bridges Volume 11: Environmental Assessment (**Ref 12-21**)(DMRB) and Interim Advice Note 125/15: Environmental Assessment Update (Ref 12-21).
- 12.3.4 The outcomes of scoping were recorded in a scoping report (Ref 12-23), which was consulted on as part of a formal request to the Inspectorate for a scoping opinion and included a summary of all assessment work undertaken as part of the design-development of the Scheme.
- 12.3.5 The Inspectorate's scoping opinion [**TR010044/APP/6.5**] identified a number of additional overarching EIA and topic-specific matters that were subsequently brought into the overall scope of the assessment. These further considerations are detailed in **Table 1** of **Appendix 4.3** of the Environmental Statement [**TR010044/APP/6.3**] and include a summary of how Highways England has responded to the points raised, and where this information is reported.
- 12.3.6 The Inspectorate agreed with Highways England that activities associated with the future maintenance of the Scheme would have limited potential to result in significant effects on population and human health. Accordingly, the effects associated with the maintenance/management phase of the Scheme were scoped out of the assessment and are not considered further.
- 12.3.7 Subsequent to the publication of the scoping opinion [**TR010044/APP/6.5**], Highways England published a series of new DMRB standards relating to sustainability and the environment (**Ref 12-24**), resulting in the phased withdrawal of the guidance used to inform the scoping exercise (**Ref 12-21**; **Ref 12-22**) from July 2019.
- 12.3.8 A decision was made by Highways England to adopt the new DMRB standards (**Ref 12-24**) part way into the assessment process, the details of which are summarised in **Chapter 4, Environmental assessment methodology** of the Environmental Statement [**TR010044/APP/6.1**].
- 12.3.9 **Table 1.2** of **Appendix 4.3** of the Environmental Statement [**TR010044/APP/6.3**] sets out the changes to the scope and methodology of the population and human health assessment resulting from adoption of the new DMRB standards (**Ref 12-24**).
- 12.3.10 Key changes to the scope of the population and human health assessment resulting from adoption of the new DMRB standards (**Ref 12-24**) were:
- Removal of the requirement to assess effects relating to Driver Stress¹ within the new DMRB standards (**Ref 12-24**). Accordingly, matters relating to Driver Stress have been removed entirely from the EIA and are no longer considered within the EIA.

¹ Driver Stress was included within the withdrawn *Design Manual for Roads and Bridges Volume 11: Environmental Assessment* (Ref 12-24) as a means of identifying and assessing the adverse mental and physiological effects experienced by a driver traversing a road network.

- b. Removal of the requirement to report effects relating to Views from the Road within the population and human health assessment. Accordingly, matters relating to Views from the Road are now reported as part of the visual impact assessments in **Chapter 7, Landscape and visual effects** of the Environmental Statement [TR010044/APP/6.1].
- c. Greater distinction in relation to effects associated with the loss of agricultural soils and those on agricultural land holdings. Accordingly, effects on agricultural soils are now reported as part of the soils impact assessments in **Chapter 9 Geology and soils** of the Environmental Statement [TR010044/APP/6.1], and effects on agricultural land holdings are reported within the population and human health assessment.

12.3.11 In addition to the matters raised in the scoping opinion [TR010044/APP/6.5] and through adoption of the new DMRB standards (**Ref 12-24**), the final assessment scope has also been shaped by the following:

- a. The outcomes of consultation and engagement with statutory bodies, non-statutory organisations and other stakeholders with an interest in matters relating to population and human health.
- b. Design changes made to the form and extent of the Scheme and the area of land required for its construction, operation and maintenance (the Order Limits).
- c. The need to extend the scope of the assessment to identify the likely effects on recreational vessel movements associated with closures of a navigable section of the River Great Ouse, which would be required during Scheme construction to install the River Great Ouse viaduct (the details of which are presented in **Chapter 2, The Scheme** of the Environmental Statement [TR010044/APP/6.1]).

12.3.12 The assessment has focused on identifying and reporting the likely impacts and effects of the Scheme on the following:

12.3.13 Land use and accessibility, comprising:

- a. Private property and housing.
- b. Agricultural land holdings.
- c. Community land and assets (these are collective resources that can be used by communities to promote social inclusion and improve health and wellbeing).
- d. Development land and businesses.
- e. Walkers, cyclists and horse riders (WCH).

12.3.14 Although it has not been possible to undertake specific individual Farm Impact Assessment interviews with agricultural landowners and tenants, an assessment of the impacts on agricultural land holdings has been carried out based on information gathered from discussions with landowners during the design of the Scheme.

12.3.15 Human health, comprising:

- a. Access to and severance from community facilities, education facilities, recreational facilities and health facilities.
- b. Access to and severance from open space, blue space, green space and play space.
- c. Use of walking, cycling and horse-riding routes.
- d. Air quality.
- e. Noise and vibration.

Assessment standards and guidance

12.3.16 The following standards and guidance have been used to inform the scope and context of the assessment, and to assist the identification and mitigation of likely significant effects. This builds on the overarching Environmental Statement methodology and guidance presented in **Chapter 4, Environmental assessment methodology** of the Environmental Statement [TR010044/APP/6.1].

Design Manual for Roads and Bridges

12.3.17 The following DMRB standards have been applied in the assessment to identify the value and sensitivity of private property and housing, community land and assets, development land and businesses, agricultural land holdings, WCH routes and human health determinants likely to be affected by the Scheme. This guidance has also been used to identify and evaluate the impacts and effects that construction and operation of the Scheme would likely have on these receptors:

- a. *LA 104 Environmental assessment and monitoring* (Ref 12-25).
- b. *LA 112 Population and human health* (Ref 12-26).

South Cambridgeshire Health Impact Assessment Supplementary Planning Document

12.3.18 This supplementary planning document provides guidance concerning planning decisions in South Cambridgeshire. Although targeted at Health Impact Assessments (HIAs), the assessment of human health considers the guidance within this document as it is relevant to the assessment of health effects within this chapter.

Establishment of the baseline

12.3.19 Establishment of the baseline environment has involved reference to existing data sources, consultation with statutory bodies and other organisations, and field surveys.

Consultation

- 12.3.20 Details regarding the statutory consultation undertaken as part of the Scheme, and its outcomes are presented in the Consultation Report [TR010044/APP/5.1].
- 12.3.21 In addition to statutory consultation, engagement was undertaken with Health and Development Officers from Bedford Borough Council, Central Bedfordshire Council, Huntingdonshire District Council and South Cambridgeshire District Council to obtain health information relevant to the assessment.

Desk study

- 12.3.22 To inform the baseline, data, information and records relating to population and human health were obtained from the following sources:
- a. 1:25,000 and 1:10,000 scale Ordnance Survey mapping and aerial photography available in the public domain – to identify private residences and property, land use relationships, and community land and facilities.
 - b. Local plans – to identify areas of residential and employment development land within the study area.
 - c. Definitive rights of way maps – to identify Public Rights of Way (PRoW) likely to be affected by the Scheme.
 - d. Sustrans Mapping- to identify if the National Cycle Network is likely to be affected by the Scheme.
 - e. Baseline health information and data received from the local authority Health and Development Officers – to inform the assessment of effects on human health.
 - f. Public data sources including Public Health England (Public Health Profiles) and the Office of National Statistics (ONS) (2011 Census) – to determine existing health conditions in the health baseline study area.
 - g. WCH user data gathered from surveys undertaken in September and August 2020.
 - h. Information provided by the Environment Agency in relation to the number of crafts travelling along the River Great Ouse.
 - i. Baseline data gathered during face-to-face meetings and telephone calls with agricultural landowners and tenants.
- 12.3.23 In addition to these data sources, information gathered as part of the following environmental assessments was also used to inform the assessment of effects on human health:
- a. Air quality – reported in **Chapter 5, Air quality** of the Environmental Statement [TR010044/APP/6.1].
 - b. Landscape and visual effects – reported in **Chapter 7, Landscape and visual effects** of the Environmental Statement [TR010044/APP/6.1].
 - c. Noise and vibration – reported in **Chapter 11, Noise and vibration** of the Environmental Statement [TR010044/APP/6.1].

WCH surveys

- 12.3.24 In order to inform the assessment of effects of the Scheme on WCH, user surveys were undertaken at 24 locations within and surrounding the Order Limits. The survey locations comprised existing PRow (footpaths and bridleways), existing roads used by WCH, and junction/interface points between PRow and existing roads.
- 12.3.25 The survey locations were selected to:
- Record existing levels of WCH use on routes that would be directly affected by the Scheme, for example by severance and/or diversion.
 - Record movements made by WCH on routes that provide connections between communities, for example to identify existing journeys made from settlements to nearby community facilities.
 - Augment WCH survey data previously recorded during the development of route options for the Scheme.
- 12.3.26 Surveys were conducted on Sunday 30 August 2020, Monday 31 August 2020 and Tuesday 8 September 2020 between the hours of 7:00am and 7:00pm. These dates were selected to capture WCH movements over a summer bank holiday weekend where recreational activity would typically be expected to be at its highest. The dates also enabled comparisons to be drawn between journeys made on a weekend, a bank holiday and a weekday during school term time which is more representative of typical commuting patterns.
- 12.3.27 Weather conditions during the surveys ranged from dry with sunny spells, to dry and overcast with occasional sunny spells.
- 12.3.28 Where feasible, the following journey information was recorded during the surveys:
- Type and number of users.
 - Time of journeys.
 - Age groups of users.
 - Purpose of user journeys.
 - Frequency of user journey.
 - Journey origins and destinations.
- 12.3.29 Observations were also recorded where no journeys or use were recorded at a survey location, and where access constraints were noted.
- 12.3.30 The full results of the WCH survey are presented in **Appendix 12.1** of the Environmental Statement [TR010044/APP/6.3].

Land use receptor assessment criteria

Value (sensitivity)

- 12.3.31 The assignment of value (sensitivity) for land use receptors (i.e. private property and housing, community land and assets, development land and businesses, agricultural land holdings and WCH) has relied on professional judgement, guided by the criteria contained in **Table 12-1**, as reproduced from *LA 112* (Ref 12-26), taking into consideration the importance of receptors to the community and scale of use (for example local, regional and national).

Table 12-1: Value (sensitivity) of land use receptors

Receptor value (sensitivity)	Description
Very high	<p>Private property and housing:</p> <ul style="list-style-type: none"> Existing private property or land allocated for housing located in a local authority area where the number of households are expected to increase by >25% by 2041 ONS data) Existing housing and land allocated for housing (e.g. strategic housing sites) covering >5ha and / or >150 houses <p>Community land and assets where there is a combination of the following:</p> <ul style="list-style-type: none"> 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) The land and assets are used by the majority (>=50%) of the community. <p>Development land and businesses:</p> <ul style="list-style-type: none"> Existing employment sites (excluding agriculture) and land allocated for employment (e.g. strategic employment sites) covering >5ha. <p>Agricultural land holdings:</p> <ul style="list-style-type: none"> 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). <p>WCH:</p> <ul style="list-style-type: none"> 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 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.

Receptor value (sensitivity)	Description
	<ul style="list-style-type: none"> Rights of way for WCH crossing roads at grade with >16,000 vehicles per day
High	<p>Private property and housing:</p> <ul style="list-style-type: none"> 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) Existing housing and land allocated for housing (e.g. strategic housing sites) covering >1-5ha and / or >30-150 houses <p>Community land and assets where there is a combination of the following:</p> <ul style="list-style-type: none"> There is substantial severance between community and assets, with limited accessibility provision <p>Alternative facilities are only available in the wider local planning authority area</p> <ul style="list-style-type: none"> The level of use is frequent (weekly) The land and assets are used by the majority (>=50%) of the community <p>Development land and businesses:</p> <ul style="list-style-type: none"> Existing employment sites (excluding agriculture) and land allocated for employment (e.g. strategic employment sites) covering >1 - 5ha <p>Agricultural land holdings:</p> <ul style="list-style-type: none"> Areas of land in which the enterprise is dependent on the spatial relationship of land to key agricultural infrastructure; and Access between land and key agricultural infrastructure is required on a frequent basis (weekly). <p>WCH:</p> <ul style="list-style-type: none"> 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 Rights of way for WCH crossing roads at grade with >8,000 - 16,000 vehicles per day
Medium	<p>Private property and housing:</p> <ul style="list-style-type: none"> 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) Existing housing and land allocated for housing (e.g. strategic housing sites) covering <1ha and / or <30 houses <p>Community land and assets where there is a combination of the following:</p> <ul style="list-style-type: none"> 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

Receptor value (sensitivity)	Description
	<ul style="list-style-type: none"> The level of use is reasonably frequent (monthly) The land and assets are used by the majority ($\geq 50\%$) of the community <p>Development land and businesses:</p> <ul style="list-style-type: none"> Existing employment sites (excluding agriculture) and land allocated for employment (e.g. strategic employment sites) covering < 1ha <p>Agricultural land holdings:</p> <ul style="list-style-type: none"> Areas of land in which the enterprise is partially dependent on the spatial relationship of land to key agricultural infrastructure; and Access between land and key agricultural infrastructure is required on a reasonably frequent basis (monthly). <p>WCH:</p> <ul style="list-style-type: none"> PRoW 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, and / or Rights of way for WCH crossing roads at grade with $> 4000 - 8000$ vehicles per day.
Low	<p>Private property and housing:</p> <ul style="list-style-type: none"> The Scheme affects unallocated sites providing housing with planning permission/in the planning process <p>Community land and assets where there is a combination of the following:</p> <ul style="list-style-type: none"> Limited existing severance between community and assets, with existing full <i>Disability Discrimination Act</i> (DDA) (Ref 12-28) 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) The land and assets are used by the minority ($< 50\%$) of the community <p>Development land and businesses:</p> <ul style="list-style-type: none"> The Scheme affects unallocated sites providing employment with planning permission/in the planning process <p>Agricultural land holdings:</p> <ul style="list-style-type: none"> Areas of land in 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
	<p>WCH:</p> <ul style="list-style-type: none"> 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 Rights of way for WCH crossing roads at grade with <4000 vehicles per day
Negligible	<p>Private property and housing:</p> <ul style="list-style-type: none"> N/A <p>Community land and assets where there is a combination of the following:</p> <ul style="list-style-type: none"> 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) The land and assets are used by the minority (<=50%) of the community <p>Development land and businesses:</p> <ul style="list-style-type: none"> N/A <p>Agricultural land holdings:</p> <ul style="list-style-type: none"> Areas of land which are infrequently used on a non-commercial basis. <p>WCH:</p> <ul style="list-style-type: none"> N/A

12.3.32 In instances where property or housing provision is integral to the character and function of the community with little/no provision for substitution (for example private property in small rural villages), a higher value (sensitivity) rating has been assigned in the assessment.

12.3.33 Similarly, a higher rating has been assigned where a business is the main source of employment for a community and little or no provision for substitution exists.

12.3.34 WCH surveys were conducted on Sunday 30th August 2020, Monday 31st August 2020 and Tuesday 8th September 2020 and have outlined the total use, frequency of use, and purpose of use for PRoWs and WCH routes within the study area. The results of the WCH surveys have therefore been used to inform the determination of the sensitivity of WCH receptors within the study area.

Magnitude of impact (change)

12.3.35 The following criteria in **Table 12-2** have been applied in the assessment to determine the magnitude of impact (change) on land use receptors, as reproduced from LA 112 (Ref 12-26).

Table 12-2: Magnitude of impact (change) for land use receptors

Magnitude of impact (change)	Typical Description
Major	<p>Private property and housing, community land and assets and development land and businesses and agricultural land holdings:</p> <ul style="list-style-type: none"> • 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 • Introduction (adverse) or removal (beneficial) of complete severance with no/full accessibility provision <p>WCH:</p> <ul style="list-style-type: none"> • >500m increase (adverse) / decrease (beneficial) in WCH journey length
Moderate	<p>Private property and housing, community land and assets and development land and businesses and agricultural land holdings:</p> <ul style="list-style-type: none"> • 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 or community assets • Introduction (adverse) or removal (beneficial) of severe severance with limited / moderate accessibility provision <p>WCH:</p> <ul style="list-style-type: none"> • >250m - 500m increase (adverse) or decrease (beneficial) in WCH journey length
Minor	<p>Private property and housing, community land and assets and development land and businesses and agricultural land holdings:</p> <ul style="list-style-type: none"> • 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 compromise overall viability of property, businesses or community assets • Introduction (adverse) or removal (beneficial) of severance with adequate accessibility provision <p>WCH:</p> <ul style="list-style-type: none"> • >50m - 250m increase (adverse) or decrease (beneficial) in WCH journey length

Magnitude of impact (change)	Typical Description
Negligible	<p>Private property and housing, community land and assets and development land and businesses and agricultural land holdings:</p> <ul style="list-style-type: none"> • 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 or community assets • Very minor introduction (adverse) or removal (beneficial) of severance with ample accessibility provision. <p>WCH</p> <ul style="list-style-type: none"> • <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.

12.3.36 Where WCH survey results show that PRoWs/WCH routes are used for recreational purposes rather than commuting, professional judgement has been used to determine the magnitude of impact of the Scheme upon WCH receptors. This is because, in contrast to routes used for commuting, an increase in usual route length and hence journey time is not necessarily detrimental for a recreational journey as users would usually be committed to a longer journey, particularly where routes link to the wider PRoW network. In such instances, professional judgement has been used to determine the magnitude of impact, which has been based upon the availability of suitable alternative routes, any changes to user safety, the impact of the Scheme upon the route's recreational value and the length of any diversions and alternatives (where information is available).

Significance of effect

12.3.37 The identification of likely significant effects on land use receptors has involved combining the value (sensitivity) of the receptor with the predicted magnitude of impact (change), guided by the significance matrix set out in LA 104 (Ref 12-25) as reproduced in **Table 12-3**.

Table 12-3: Significance matrix

		Magnitude of impact (change)				
		No change	Negligible	Minor	Moderate	Major
Environmental value (sensitivity)	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	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight

12.3.38 Where the significance of an effect is represented by two descriptors, for example large/very large within the matrix, professional judgement has been used to determine which of the significance descriptors applies to the effect being assessed.

12.3.39 Where professional judgement has resulted in a deviation from the thresholds presented in the matrix, these are explained within the relevant sections of this chapter and are supported by appropriate evidence and explanation.

12.3.40 Significant effects comprise those effects that are within the moderate, large or very large categories, in accordance with *LA 104* (Ref 12-25).

Human health assessment criteria

12.3.41 A qualitative assessment of human health has been undertaken in accordance with *LA 112* (Ref 12-26). This has involved establishing the sensitivity of a community/population based on a health profile developed within a defined health baseline study area (see section 12.5), and reporting this on a scale of low, medium or high.

12.3.42 Changes to health determinants as a result of the Scheme have been identified and determined using information from other assessments undertaken as part of the EIA of the Scheme, for example air quality and noise and vibration.

12.3.43 The likely health outcome(s) have been identified in line with the categories outlined in **Table 12-4**, based on the sensitivity of a community/population and changes to health determinants likely to occur as a result of the Scheme.

Table 12-4: Human health outcome categories

Health outcome category	Health outcome 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

12.4 Assessment assumptions and limitations

Scheme design and limits of deviation

- 12.4.1 The assessment has been based on the Scheme description presented in **Chapter 2, The Scheme** of the Environmental Statement [TR010044/APP/6.1] and has taken into account the lateral limits of deviation illustrated on the Works Plans [TR010044/APP/2.3], and the vertical limits of deviation, in order to establish a realistic worst case assessment scenario.
- 12.4.2 This scenario identifies and reports the effect that any lateral (horizontal) and/or vertical deviation would realistically give rise to. This has, for example, taken into account the maximum permanent land take that could result from design changes within the limits of deviation.
- 12.4.3 Notwithstanding any potential deviation, all embedded and essential mitigation measures would remain deliverable within the extents of the limits of deviation.

Baseline data and surveys

- 12.4.4 The establishment of baseline conditions has referenced, where relevant, baseline information gathered as part of related assessments reported within the Environmental Statement [TR010044/APP/6.1]. Accordingly, any limitations encountered and/or assumptions applied in those assessments relating to the validity and accuracy of baseline data and information are relevant to the assessment of population and human health.
- 12.4.5 Community land and assets are referred to expressly in Section 12.6 only where they contribute to local context, or where they are likely to be directly or indirectly affected by the Scheme. Only community land and assets, which are directly or indirectly affected by the Scheme, are included within the community assessment. However, all community land and assets outlined in the Baseline Assessment (section 12.5) have been considered in the context of the community assessment. Consequently, not all community resources within the adopted study area (see Section 12.5) have been referenced within the assessment.

- 12.4.6 Some Covid-19 restrictions were in place at the time the WCH surveys were conducted meaning that the survey results may not be fully representative of normal WCH activity. However, at the time the surveys were conducted, the Covid-19 restrictions in place related to social distancing, no lockdown measures were in place in the area at the time of the surveys². The effect of Covid-19 restrictions on the WCH survey results is therefore considered to be negligible.

Impact assessment and mitigation

- 12.4.7 The establishment of baseline conditions has referenced, where relevant, the findings of related assessments reported within the Environmental Statement [TR01004/APP/6.1]. Accordingly, any limitations encountered and/or assumptions applied in those assessments relating to the assessment and mitigation of impacts are relevant to the assessment of population and human health.
- 12.4.8 The following assumptions relating to the assessment of impacts and effects (and their mitigation) on land and land use interests have been applied:
- a. The baseline assessment was undertaken prior to the Covid-19 pandemic and it is assumed that land and assets will return to this operational capacity.
 - b. The assessment addresses only the direct impacts and effects of the Scheme on commercial land in relation to land take, severance and changes to accessibility.
 - c. Any impacts on individual properties do not constitute a significant community effect. There are a number of individual properties within the Order Limits where impacts may be experienced from other topic assessments, where relevant these are reflected in those assessments.
 - d. An agricultural impact assessment survey involving landowners and tenants within the Order Limits that would be affected by the Scheme was planned to be undertaken after March 2020 during the design-development of the Scheme; Questionnaires were sent to landowners and tenants in October 2020 but at the time of writing, responses to these questionnaires were not received. Additionally, the timing of walkover surveys coincided with the Covid-19 pandemic and the associated lockdown restrictions. Therefore based on the above, a high level assessment has been undertaken of the impacts and effects on agricultural holdings using information gathered from consultation responses from landowners and at project meetings with landowners and tenants held to discuss the detailed design of the Scheme, particularly to mitigate land-take and severance impacts on individual land holdings.

² Restrictions relating to social distancing were in place, where no more than six people could meet outdoors or indoors. Community and recreational spaces remained open where they were able to comply with social distancing guidelines.

- e. Land returned to agriculture following its temporary use for construction would be restored to its pre-construction condition.
- f. The existing pattern of ownership and agricultural land use would remain unaltered until the start of construction.
- g. The assessment of impacts and effects on PRoWs or WCH during construction of the Scheme has assumed that all permanently impacted PRoWs would have appropriate diversion routes in place during the works. Temporary diversion routes have been identified within the assessment through a combination of construction information provided by Highways England's appointed buildability advisor, and professional judgement.
- h. It is assumed that suitable access to public transport will be maintained during construction.
- i. Where there is access to private, commercial or community land and assets that are impacted by the Scheme it is assumed that the existing access will be maintained through construction until alternative access is provided.
- j. Where changes to access arrangements are not required, traffic management measures will be implemented so that all accesses are retained and usable through the construction period.

12.5 Study area

- 12.5.1 Study areas have been guided by *LA 112* (Ref 12-26) and defined based on the type of receptor being assessed and the area over which potential impacts are likely to occur.
- 12.5.2 When assessing impacts on land use and accessibility, the study area has been defined as the extent of land within the Order Limits and an area extending 500 metres beyond those limits (the 500m study area). Where effects on receptors are identified beyond the 500m study area, these have been included within the assessment.
- 12.5.3 For the assessment of designated Public Rights of Way, a 500-m study area has been assumed in line with paragraph 12.5.3. For the assessment of non-designated routes, only those which are directly affected by the Scheme have been included within the assessment due to the volume of non-designated footpaths within 500m of the scheme. There are no anticipated impacts on other non-designated routes within 500m of the Scheme.
- 12.5.4 The human health baseline study area aligns with the study area outlined for land use and accessibility impacts. In addition to this area, a population-level baseline study area is appropriate due to the availability of human health data across the local authorities and wards that will be either directly or indirectly affected by the Scheme. Accordingly, the following local authority administrative areas comprise the human health baseline study area:
 - a. Bedford Borough Council.
 - b. Central Bedfordshire District Council.

- c. Huntingdonshire District Council.
- d. South Cambridgeshire District Council.

- 12.5.5 Scheme specific human health impacts, such as closure of PRowS, have only been identified within the 500m study area.
- 12.5.6 Where specific wards are referenced in the human health baseline, to provide a more localised analysis of human health indicators, the data presented represents the 2011 Census frozen ward boundaries. Since 2011, the boundaries of some of the wards assessed have changed; however, the use of these spatial boundaries has allowed a consistent analysis of different health indicators. The 2011 Census ward boundaries are therefore considered suitable for assessing the existing baseline conditions for human health.
- 12.5.7 Throughout the remainder of this chapter, the term “study area” refers to the typical 500m land use and accessibility study area as defined in paragraph 12.5.2. The term “health baseline study area” then refers to the human health baseline study area as defined in paragraph 12.5.4.

12.6 Baseline conditions

Overview

- 12.6.1 Land use within the 500m study area is marked by a contrast of urban development to the north-west of the Scheme against the more open agricultural landscapes to the south-east of the new dual carriageway.
- 12.6.2 The main urban settlement within the 500m study area comprises the southern and eastern fringes of St Neots, located north-east of Wyboston. Smaller villages and settlements are principally focused within the western extents of the 500m study area and include the villages of Tempsford, Roxton, Chawston and Wyboston. More dispersed settlements are located throughout the central and eastern extents of the 500m study area.
- 12.6.3 Local businesses and commercial enterprises are located throughout the study area, with the greatest concentration of business activity (for example business parks) located in Eaton Socon to the south of St Neots.
- 12.6.4 Community facilities and assets are distributed across the study area. These include village halls, religious facilities, play areas, open spaces, schools, health centres and PRowS, high concentrations of which are found in St Neots and Roxton.
- 12.6.5 The study area also includes several areas of development land, including land that is allocated for strategic development within local plans as well as agricultural land holdings.

Land use and accessibility

Private property and housing

- 12.6.6 The main residential areas located within the 500m study area comprise:
- a. St Neots (southern and eastern fringes)

- b. Tempsford
- c. Roxton
- d. Chawston
- e. Wyboston
- f. Little Barford
- g. Croxton
- h. Eltisley

- 12.6.7 Brook Cottages, which is Grade II listed building formed of two private dwellings, will be demolished as a result of the construction of the Scheme. The building is located along the western side of the A1 to the north of the existing Black Cat Roundabout. One of the dwellings that forms the building is currently inhabited.
- 12.6.8 A residential property is located above the commercial premises of A1 Keen Screens. It is located along the eastern side A1 to the north of the existing Black Cat Junction opposite the Shell petrol station.
- 12.6.9 Six areas of residential development land are located within the 500m study area. These are subject to planning applications as of November 2020 which could see the development of up to approximately 6,700 residential units. The location and extent of these areas are presented in **Table 12-5** and illustrated on **Figure 12.1** of the Environmental Statement [TR010044/APP/6.2].

Table 12-5: Residential development land and submitted planning applications

Location	Planning reference	Number of residential units	Status	Other on-site developments
Land Adjoining Top Farm, Wyboston	14_00946_EIASCR	450	Permitted. No further applications since 2014.	Retail, open space and landscaping.
Land Between the Railway Line, St Neots Bypass and Potton Road Eynesbury*	16/01507/OUT	79	Approved.	N/A.

Location	Planning reference	Number of residential units	Status	Other on-site developments
Wintringham, St Neots*	17/02308/OUT	Up to 2,800	Approved. Construction work has begun.	63,500sqm of employment development (B1-B8), community and health uses, local centre, temporary primary school, two permanent primary schools, open space, play areas and recreation facilities.
Loves Farm Eastern Expansion Development Area, St Neots*	1300388OUT	Up to 1,020	Approved.	Nursery/creche, public house, hotel, care accommodation, primary school, cycle/pedestrian routes.
Site Adjacent to Pond at Newton Community Primary School, Eltisley	S_3182_19_FL	12	Awaiting decision.	N/A.
Land to the West of Cambourne (Excluding Swansley Wood Farm)*	S_2903_14_OL	Up to 2,350	Permission granted.	Retail, offices/light industry, community and leisure facilities, two primary schools and one secondary school.
*Indicates a site allocated to development within the relevant local plan.				

- 12.6.10 Most notably, three large-scale mixed-use areas of residential development land are located along the boundary of the existing A428, these include: Wintringham, St Neots; Loves Farm eastern expansion development area, St Neots; and land to the west of Cambourne (excluding Swansley Wood Farm). These mixed used developments lie within Strategic Expansion Zones outlined within local plans; firstly, land to the east of St Neots within the *Huntingdonshire's Local Plan to 2036* (Ref 12-18) and secondly, land to the west of Cambourne (bordering the existing Caxton Gibbet roundabout) within the *South Cambridgeshire Local Plan 2018* (Ref 12-19). In total, up to 6,350 residential units could be developed on these areas of land, along with retail space, offices, light industry and schools.
- 12.6.11 In addition to the residential development areas outlined in **Table 12-6**, land to the north of School Lane in Roxton has been allocated for housing development within the *Bedford Borough Local Plan to 2030* (Ref 12-13). The number of residential units that could be built on this site is expected to be between 25 and 50, which will contribute to the borough's target of 260 new dwellings for rural service centres by 2030.
- 12.6.12 Within the *Central Bedfordshire Pre-Submission Local Plan 2015 – 2035* (Ref 12-16), land to the north, south and east of the large village of Tempsford has also

been safeguarded for future development and growth. This land will be assessed further in the Partial Plan Review which will consider the potential for 10,000 plus new homes.

Community land and assets

Community land

- 12.6.13 There are nine publicly accessible open spaces within the 500m study area. These open spaces are identified in **Table 12-6**, along with their respective type, on-site facilities and existing access points.

Table 12-6: Community land within the 500m study area

Name	Type	Distance from Order Limits (m)	On-site facilities	Access
Barford Road Pocket Park	Park	289	Fitness area, Barford Road Play Area, wildlife viewing platform.	Ouse Valley Way footpath; Ernulf Academy & Leisure Centre Car Park; Bevington Way and Chapman Way, Eynesbury; Further Footpaths
Barford Road Play Area	Play Area	308	Wooden play equipment with seating on open space for children aged 4 to 8.	Bevington Way and Chapman Way, Eynesbury; Barford Road Pocket Park
Church End Play Area	Play Area	444	Children's play equipment on a grass field with two full size football goals.	Church Street, Tempsford.
Hen Brook Park	Open Space and Play Area	877	Grass field and play equipment (swings and roundabout)	Hampden Way, Cromwell Road and Howitt's Lane in Eynesbury.
Maule Close Play Area	Play Area	273	Two swings, rocking units and a seat for children aged 1 to 4.	Maule Close, Eynesbury.
Sir John's Wood	Ancient Woodland	192	N/A	Station Road, Tempsford.

Name	Type	Distance from Order Limits (m)	On-site facilities	Access
Tempsford Millennium Garden Sanctuary	Public Garden	161	Multiple benches	Church Street and Mill Lane, Tempsford.
The Green, Eltisley	Village Green	189	Cricket square, play equipment (swings, slide, balance beam)	St Neots Road, Cambridge Road, The Green, Caxton End, Potton End
The Spot Skatepark	Skatepark	19	Skatepark	Allington Road, PRow 4 and PRow 194/37

Source: OS MasterMap, (2020); OS Open Greenspace, (2020); OpenStreetMap, (2020); Google Maps, (2020)

- 12.6.14 The spatial distribution of publicly accessible open spaces within the study area is shown on **Figure 12.1** of the Environmental Statement [TR010044/APP/6.2].
- 12.6.15 Play spaces in the study area are located within residential areas in Eynesbury and Tempsford.
- 12.6.16 In addition to the publicly accessible open spaces identified in **Table 12-6** above, The River Great Ouse routes from Northamptonshire passing through Bedford and through St Neots and Huntingdon and then goes on to Kings Lynn where it meets the North Sea, at the Wash. The River Great Ouse is within the eastern Order Limits to the Scheme and runs south to north between Roxton and Tempsford before flowing directly through Bedford Road Pocket Park and the more urban area of St Neots. The river is used for recreational purposes for activities such as boating as well as for events such as the Bedford River Festival, which is held once every two years on a weekend in July and involves several events including a range of river activities. Information has been provided by the Environment Agency highlighting that during busy summer months the maximum number of crafts passing through the section of the river within the Order Limits was 50.

Community assets

- 12.6.17 Within the 500m study area, 15 facilities have been identified as community assets. These assets comprise of two nurseries, three schools, one health centre, one mental health facility, four religious facilities and four community facilities.
- 12.6.18 Community assets within the study area are identified in **Table 12-7**, along with their respective type, location and existing access points. The spatial distribution of the community assets is shown on **Figure 12.1** of the Environmental Statement [TR010044/APP/6.2].

Table 12-7: Community assets within the 500m study area

Name	Type	Location	Access
Bluebell Day Nursery	Nursery	Eltisley	Caxton End, Eltisley
Treetops Nursery	Nursery	Eynesbury	Marlborough Road, Eynesbury
Newton Community Primary School Eltisley	School	Eltisley	Caxton End, Eltisley
Roxton Lower School	School	Roxton	School Lane, Roxton
St Neots Middlefield Community Primary School	School	Eynesbury	Andrew Road, Eynesbury
Dumbelton Medical Centre	Health Centre	Eynesbury	Buttercup Avenue and Chapman Way, Eynesbury
Eltisley Manor (Nouvita Healthcare)	Mental Health Facility	Eltisley	A428 Cambridge Road
Tempsford Methodist Church (Ebenezer Chapel)	Religious Facility	Tempsford	Station Road, Tempsford
Roxton Congregational Church	Religious Facility	Roxton	High Street, Roxton
St Mary Magdalen Church	Religious Facility	Roxton	School Lane, Roxton
St Pandionia and St John the Baptists Church	Religious Facility	Eltisley	St Neots Road and The Green, Eltisley
Roxton Village Hall	Community Facility	Roxton	High Street, Roxton
Stuart Memorial Hall	Community Facility	Tempsford	Station Road, Tempsford
The Cade Pavilion Eltisley Cambridgeshire	Community Facility	Eltisley	The Green, Eltisley
The Village Hall (Morris Walk)	Community Facility	Wyboston	Morris Walk, Wyboston

Source: OS MasterMap, (2020); OS Open Greenspace, (2020); OpenStreetMap, (2020); Google Maps, (2020)

12.6.19 Schools and nurseries, as a minimum, are generally used five days per week (Monday-Friday) by local communities. A school year is 39 weeks in England; however, school facilities can serve several purposes outside of just child education, meaning that use can occur outside of usual periods. Bluebell Day Nursery, which serves Eltisley, as well as the villages of Toseland, Graveley,

Papworth St Agnes and Yelling, is advertised as being open for 51 weeks of the year.

- 12.6.20 Dumbelton Medical Centre, open from Monday to Friday, provides GP and health services to the local community in Eynesbury. Eltisley Manor (Nouvita Healthcare) is a mental health facility that cares for younger persons with complex mental health needs and older persons with health issues such as dementia. This facility provides 24/7 care and permits visitors at pre-determined times.
- 12.6.21 The religious facilities are mostly open for Sunday services and some evening services during the week. Religious facilities, however, can serve as venues for other community functions. Tempsford Methodist Church for instance hosts a chat club on the fourth Wednesday of every month.
- 12.6.22 Roxton Village Hall is in use most days by a variety of groups and clubs, while Stuart Memorial Hall and the Village Hall (Morris Walk) tend to be used by groups and clubs that meet on a monthly basis. The clubs that use these community facilities are wide ranging and include the Local History Group, Mums and Tots, Roxton Bowls Club, Roxton Women's Institute and Black Cat Women's Institute. The community facilities also serve as a venue for council meetings, dance classes, dog training and more. All community facilities identified within the baseline area are available for hire by members of the public for private events, meaning they could be in use at any time.
- 12.6.23 There are no existing accessibility restrictions or severance issues for the existing community land and assets.

Existing businesses

- 12.6.24 Commercial receptor locations include areas zoned for manufacturing, light or heavy industry, retail activity, and locations that are regular work sites.
- 12.6.25 Numerous commercial receptors fall within the baseline study area. Where commercial receptors have been identified in close proximity to each other, they have been grouped by their general location.
- 12.6.26 The Scheme will not have a direct impact upon access to any existing businesses located outside of the study area.
- 12.6.27 Commercial receptor locations in the study area, along with their main class uses and existing access points are outlined in **Table 12-8**.

Table 12-8: Businesses within the 500m study area

Business area location	Main types of business	Access
Blunham Lane	Retail and wholesale	Blunham Lane and The Butterfly, Tempsford A1
Kelpie Marina	Marina	A1 (northbound)
Vanilla Alternative/The Anchor Lodge Hotel	Hotel	A1 (northbound)

Business area location	Main types of business	Access
	Entertainment Club	
Roxton Garden Centre	Retail	School Lane, Bedford Road, High Street, Roxton Road (Roxton) A1 and A421
Black Cat Services	Restaurant and café, retail and hotel	A1 and existing A428 at the existing Black Cat roundabout
Chawston	Light industry and retail	Chawston Lane and Roxton Road, Chawston A1 and A421
BP Services	Petrol and food services	A1
Wyboston (Village Area)	Restaurant and café, retail, leisure, professional services	The Lane, Wyboston A1
Eynesbury Hardwicke	Leisure and light industry	Potton Road, Eynesbury Hardwicke Existing A428
North of Wyboston and South of Eaton Socon (Wyboston Lakes Resort and Pheonix Park)	Leisure, professional services, retail and hotel	A1 and existing A428
Eaton Socon (Colmworth Business Park, Priors Gate Industrial Estate, Little End Road, Quora Retail Park, Howard Road)	Light industry, restaurant and café, retail, distribution, hotel	Great North Road A1 and existing A428
Arlington Road Industrial Estate and Little Barford Power Station	Light industry and heavy industry	Barford Road Existing A428
Eynesbury	Retail, restaurant and café	Existing A428 / Barford Road Roundabout
Croxton (Whitehall Farm Industrial Estate)	Light industry	Toseland Road, Croxton Existing A428
Eltisley	Light industry and hotel	Cambridge Road, Eltisley Existing A428
Caxton Gibbet	Restaurant and café, hotel, light industry and retail	Ermine Street (A1198), existing A428 and existing Caxton Gibbet roundabout

Source: Google Maps 2020

- 12.6.28 The spatial distribution of the commercial receptors identified in **Table 12-8** is shown on **Figure 12.1** of the Environmental Statement [TR010044/APP/6.2].
- 12.6.29 Several designated industrial estates/business areas fall within the study area, the largest of these are concentrated along the existing A428 by Eaton Socon, Eynesbury and Wyboston. The area to the south of Eaton Socon contains several business areas, including Colmworth Business Park, Priors Gate Industrial Estate and Quora Retail Park, as well as a large number of businesses along Howard Road and Little End Road. Over 100 businesses are located in the Eaton Socon area. Smaller business locations in the study area include Black Cat Services, Roxton Garden Centre retail area and Whitehall Farm Industrial Estate in Croxton.
- 12.6.30 There are no existing accessibility restrictions or severance issues to existing businesses within the baseline study area.
- 12.6.31 When considering the existing businesses within the study area, it also important to consider levels of local employment. **Table 12-9** below presents the economic activity and employment rates for people aged 16 to 64 (working age) across the local authorities within the study area for the year ending December 2019. Each local authority is shown to have either similar or higher economic activity and employment rates than the national average.

Table 12-9 Local economic activity and employment rates

Name	Bedford	Central Bedfordshire	Huntingdonshire	South Cambridgeshire	England
Economic activity rate - aged 16-64	79.6%	81.8%	82.3%	84.5%	79.2%
Employment rate - aged 16-64	76.9%	80.8%	79.3%	82.4%	76.0%

Source: ONS, (2020); Annual Population Survey (2019)

Development land

Development land for employment purposes allocated by local authorities

- 12.6.32 Several areas of land have been allocated for future development and employment and business purposes by the local authorities within the study area. The spatial distribution of this development land is shown on **Figure 12.1** of the Environmental Statement [TR010044/APP/6.2].
- 12.6.33 Land to the east of St Neots has been allocated as a Strategic Expansion Location within *Huntingdonshire's Local Plan to 2036* (Ref 12-18). The development will include approximately 22ha of class B employment land, as well as a 3ha local centre that is set to comprise of:
- B1a office uses

- b. 4,000m² gross retail floorspace (A1)
- c. A supermarket (A1)
- d. Maximum retail floorspace of 3,000m² and food and drink use (A2 to A5)

12.6.34 A neighbourhood centre (0.3ha) will also include 800m² of floorspace for retail, service, food and drink and community uses (classes A1 to A5 and D1 to D2).

12.6.35 *The South Cambridgeshire Local Plan 2018* (Ref 12-19) identifies land to the west of Cambourne as an area for the development of a sustainable village. This development will primarily be residential with a small allocation of employment land, which will primarily be in use class B1. Small scale shops that serve the village will also be constructed.

Development land not allocated by local authorities but subject to planning applications

12.6.36 One area of land within the study area, which is not allocated for strategic development by a local authority, is subject to a planning application for commercial/business use. Should this application be successful, the development will contribute to local employment. The planning application concerns a request for a screening opinion in respect of the erection of a 100-bedroom budget hotel with associated car park and landscaping. This planning application is within the Bedford Borough Local Authority area (planning reference 17_01862_EIASCR). The land for this planning application site is located to the north of the existing Black Cat roundabout on the western side of the A1 and can be found on **Figure 12.1** of the Environmental Statement [TR010044/APP/6.2].

Agricultural land holdings

12.6.37 Agricultural land holdings within the study area are predominantly arable. In total, 32 agricultural land holdings have been identified within the study area, the largest of which are located to the east of St Neots along the existing A428. Smaller and more compact agricultural land holdings are located between the villages of Tempsford, Roxton and Chawston to the south-west of the Scheme.

12.6.38 The agricultural land holdings in the east of the Scheme are generally large to substantial arable holdings of more than 200 hectares, and often considerably larger. Thirteen large holdings have been identified within the study area. The land is primarily owned and farmed in hand, although there are some tenanted farms and some land parcels that are farmed on contract agreements. Farm holdings in this area have also diversified into non-agricultural sectors such as wedding venue hire as well as providing services to other agricultural businesses such as grain drying and storage, haulage and agricultural laboratory services. The enterprise is partially dependent on the spatial relationship of land to key agricultural infrastructure (principally farm buildings), with access between the two required on a reasonably frequent basis.

12.6.39 Agricultural land in the west of the Scheme to the south and south-west of St Neots, is predominantly made up of smaller land holdings. Many of the land parcels in this area do not form part of commercial agricultural holdings but

instead are used for small-scale equestrian grazing or small holdings. Some are used infrequently on a non-commercial basis and others are generally in arable use.

WCH Routes

- 12.6.40 PRowS are important assets for local areas, as they can connect smaller villages and centres to community facilities. They also provide routes upon which the local population can exercise, which are often safe from vehicular traffic.
- 12.6.41 In total, 39 different PRow routes and 100 different PRow sections are located within 500m of the Order Limits. The 100 different PRow sections comprise of 88 footpaths, 11 sections of bridleway and one byway which is open to all traffic. The PRow network within the baseline study area is presented on **Figure 12.1** of the Environmental Statement [TR010044/APP/6.2].
- 12.6.42 One of the greatest concentrations of PRowS within the study area lies to the south-west of the Scheme, close by to the existing Black Cat roundabout and between the villages of Tempsford, Roxton and Chawston. The PRowS in this area can be used by local residents to access community facilities in neighbouring villages; mainly village halls and religious facilities.
- 12.6.43 There is also a series of PRowS running east to west across the centre of the Scheme, crossing over the existing A428 between the urban areas of Eynesbury and St Neots and the open countryside to the north-east of Eynesbury Hardwicke. However, as a result of the Wintringham development which is located in the Strategic Expansion Zone to the east of St Neots, three of these PRowS will be permanently closed before construction works begin for the Scheme. As such, they have not been considered within the assessment.
- 12.6.44 Hall Lane Byway, the only byway in the study area, is located approximately halfway between St Neots and Croxton and is accessible from the existing A428. The byway has five Traffic Regulation Orders (TROs) in place restricting flow at certain times of the year, meaning the byway can be used without hinderance or severance.
- 12.6.45 In addition to PRowS, the study area contains one National Cycling Network (NCN) Route and one Regional Trail. NCN Route 12 passes through Barford Road Pocket Park and through the Order Limits across the A1 Great North Road, as well as the villages of Wyboston, Chawston and Roxton. Ouse Valley Way, the only regional trail within the study area, also passes through the Order Limits within proximity to the villages of Roxton, Chawston and Wyboston. Ouse Valley Way directly passes the entrances to Priors Gate Industrial Estate and Colmworth Business Park in Eaton Socon. Both NCN Route 12 and Ouse Valley Way therefore connect residents from Roxton, Chawston and Wyboston to wider employment opportunities and larger community facilities in Eaton Socon and St Neots.

- 12.6.46 In addition to the designated WCH routes outlined above, the study area contains non-designated routes such as footways along roads. The non-designated routes that will be affected by the Scheme include: Roxton Road link (north), Roxton Road link (south), BP filling station service road, Combined Kelpie Marina access road, Cambridge Road junction (including sections of the realigned A428), Realigned Toseland Road, Eltisley link (including sections of the realigned A428), Caxton Gibbet junction. Spatial Transport Network Characteristics
- 12.6.47 The A1 Great North Road and the existing A428 are the two major roads within the study area. The A1 connects London to Edinburgh and is the longest numbered road in the UK. Within the study area, the A1 is a two-lane dual carriageway running in a north-south direction to the east of St Neots, with a speed limit of 60mph. The existing A428 is the strategic local route between St Neots and Cambridge. Within the study area, the existing A428 is mostly a single-lane road which runs in an east-west direction, with a speed limit of 60mph. To the east of the existing Caxton Gibbet roundabout, the existing A428 is a dual carriageway.
- 12.6.48 Barford Road is an important local road, which runs north-south between Eynesbury and the village of Tempsford. This route offers an alternative to the use of the A1 and the existing A428 when travelling between St Neots and Tempsford. It is more commonly used by local traffic and is not suitable for vehicles over 7.5 tonnes. Additionally, the B1046 runs east-west from Eynesbury to Great Gransden. This road is a key part of alternative routes between St Neots and the villages Croxton and Eltisley.
- 12.6.49 Bus services within the study area range from local routes to inter-city networks. The key bus routes with bus stop locations within the study area are identified in **Table 12-10**.

Table 12-10: Key bus routes within the study area

Bus Route Number	Key Bus Stop Locations
Citi 4	Cambridge – Cambourne
18	Cambridge - Cambourne - Eltisley
61 / 61X	Eynesbury - St Neots - Eaton Socon
63	Eynesbury - Eaton Ford - St Neots - St Neots Rail Station - Eaton Socon
C2	St Neots - Abbotsley - The Hatleys
X3	Cambridge - Cambourne - Huntingdon
X5 (now 905)	Cambridge - St Neots - Oxford
X5 (now 905)	St Neots - Wyboston – Roxton- Bedford - Milton Keynes
6	Bedford - Roxton - Tempsford - Biggleswade

Bus Route Number	Key Bus Stop Locations
112	Biggleswade - Tempsford - Roxton - Chawston - Wyboston - St Neots

Source: Bus Times (<https://bustimes.org/>)

12.6.50 At the local level, statistics for the number of annual passengers using each of the bus services identified in **Table 12-10** are not available, with the X5 service operating between Cambridge and Oxford being an exception. This X5 service operates every 30 minutes for most of the day and during 2014 was used by around 1.3 million passengers (Ref 12-29).

12.6.51 Statistics for local bus passenger journeys per person, produced by the Department for Transport (DfT), are available at the local authority level. Local bus passenger statistics are presented in **Table 12-11**. The local authority of Cambridgeshire shows the combined data for the districts of Huntingdonshire and South Cambridgeshire, as well as Fenland, East Cambridgeshire and Cambridge.

Table 12-11: Local bus journey statistics by local authority

Type of Bus Journey	Bedford	Cambridgeshire	Central Bedfordshire	England
Passenger journeys on local bus services 2018/19 (million)	5.7	20.0	3.9	4,318.3
Passenger journeys on local bus services per person 2018/19	33.3	30.7	13.7	77.1
Elderly and disabled concessionary passenger journeys on local bus services 2018/19 (million)	2.2	4.6	1.3	957
Elderly and disabled concessionary passenger journeys on local bus services 2018/19 (% of total passenger journeys)	36%	23%	37%	22%

Source: DfT (2019); Public Service Vehicle Survey

- 12.6.52 The statistics in **Table 12-11** show that significantly fewer bus journeys are taken per person in the local authorities within the study area than England's national average. The number of passenger journeys on local bus services per person in Central Bedfordshire is more than two times lower than in Bedford and Cambridgeshire, and more than five times lower than the national average.
- 12.6.53 As a percentage of total local bus journey passengers, the proportion of elderly and concessionary passengers within Cambridgeshire (23%) aligns with England's national average (22%). In contrast, the proportion of concessionary and elderly passengers using local bus services in Bedford and Central Bedfordshire is significantly higher.
- 12.6.54 In addition to the bus routes outlined in **Table 12-10**, public transport within the study area includes St Neots Rail Station. This station connects St Neots to the wider rail network and offers regular services to Peterborough and London. The East Coast Main Line (ECML) rail network route passes through the station of St Neots but does not stop. The ECML rail track passes through the order limits in two positions: underneath Potton Road (B1046) and over the A428 to the south eastern edge of Eynesbury; and in open countryside to the north east of Tempsford where the new A428 alignment will be positioned.

Human Health

Recreational facilities

- 12.6.55 Recreational facilities within the study area can contribute to improving local health and wellbeing. Assessment of changes in accessibility and severance between communities and recreational facilities aligns with the scope of human health assessment within guidance document *LA 112* (Ref 12-26).
- 12.6.56 The recreational facilities within the study area are presented in **Table 12-8**. These facilities are spatially presented on **Figure 12.2** of the Environmental Statement [TR010044/APP/6.2]. Golf courses are also spatially presented in **Figure 12.1** of the Environmental Statement [TR010044/APP/6.2]. There are no existing severance or accessibility issues for the recreational facilities within the study area.

Table 12-12: Recreation facilities within the 500m study area

Name	Type	Location	Access
Abbotsley Golf Club (currently closed)	Golf Course	Eynesbury Hardwicke	Potton Road, Eynesbury Hardwicke
All Aboard Boating	Boat Hire	Eaton Socon	School Lane, Eaton Socon
Begwary Brook	Fishing	Wyboston	Wyboston Lake Complex A1 and the existing A428
Gingerbread Lake	Fishing	Eaton Socon	Howard Road, Eaton Socon

Name	Type	Location	Access
Hill Top Equestrian Centre	Equestrian	Yelling	High Street, Yelling
Kelpie Marina	Marina	Roxton	School Lane, Roxton A1
Ride Leisure	Water Park	Wyboston	Existing A428 and A1
Rivermill Marina	Marina	Eaton Socon	School Lane, Eaton Socon
St Neots Golf Club	Golf Course	St Neots	Crosshall Road (B1048), St Neots
Waresley and District Gun Club	Shooting Range	Eynesbury Hardwicke	Potton Road, Eynesbury Hardwicke
Wyboston Lakes Golf Club	Golf Course	Wyboston	Existing A428 and A1

Source: Google Maps 2020

Community Health Profiles

Age Profile

- 12.6.57 ONS mid-year population estimates (Ref 12-30) show that the percentage of the population under the age of 16 in all four of the local authorities within the health baseline study area is broadly in line with England's national average (19.2%). Bedford has the highest population proportion under the age of 16 within the health baseline study area (20.2%). The ward of Bourn in South Cambridgeshire has a much younger age profile than the other wards within the health baseline study area. Compared to South Cambridgeshire (20.2%) and England (19.2%), a significantly higher proportion of Bourn's population is under the age of 16 (30.0%).
- 12.6.58 The proportion of the population over the age of 65 in all four local authorities is broadly in line with England's national average (18.2%). Huntingdonshire has the highest population proportion over the age of 65 within the health baseline study area (19.9%). Only 7.6% of Bourn's population is aged over 65. A lower proportion of older residents and hence the proportion of the population that is typically more vulnerable to health problems could make Bourn less susceptible to health issues than the wider area as whole. In contrast, the ward of Wyboston in Bedfordshire has the highest population proportion of people over the age of 65 in the health baseline study area (25.4%), which suggests that Wyboston's population may be more vulnerable to health problems associated with older age.

Ethnicity

- 12.6.59 ONS data (Ref 12-31) shows the population proportion by ethnicity for each local authority within the health baseline study area. This data is presented in **Table 12-13**.

Table 12-13: Ethnicity breakdown by local authority

Local Authority / Area	White	Mixed / Multiple Ethnic Group	Asian / Asian British	Black / African / Caribbean / Black British	Other
Bedford	80.5%	3.4%	11.4%	3.9%	0.7%
Central Bedfordshire	93.8%	1.9%	2.5%	1.4%	0.3%
Huntingdonshire	94.8%	1.5%	2.5%	1.0%	0.3%
South Cambridgeshire	93.3%	1.7%	3.7%	0.9%	0.4%
England	85.4%	2.3%	7.8%	3.5%	1.0%

Source: ONS, (2011); Census 2011

12.6.60 The population within the health baseline study area is shown to be mostly White, with the Asian / Asian British population being the second largest ethnic group by population proportion. Apart from Bedford, the local authorities within the health baseline study area are less ethnically diverse than the national average.

Childhood Obesity

12.6.61 Data from Public Health England (Ref 12-32) for the year 2018/19 shows that the prevalence of obesity in children (age 10-11 years) in England is 20.2%. The prevalence of obesity in children (age 10-11 years) in Central Bedfordshire (14.9%), Huntingdonshire (14.7%) and South Cambridgeshire (11.2%) is significantly better than the England average. In contrast to the other local authorities in the health baseline study area, Bedford has a similar prevalence of childhood obesity to the national average (21.1%).

Emergency Hospital Admissions for Chronic Obstructive Pulmonary Disease (COPD)

12.6.62 Chronic Obstructive Pulmonary Disease (COPD) is a common respiratory disease in the UK, usually affecting people over the age of 35.

12.6.63 Over the 5-year period between 2013/14 and 2017/18 (Ref 12-33), hospital admissions for COPD in all four local authorities within the health baseline study area were lower than the national average (100.0 standardised admission ratio (SAR)). Compared with other local authorities within the health baseline study area, Bedford had the highest hospital admission ratio for COPD (98.5 SAR); this closely aligns with the national average. Contrastingly, South Cambridgeshire had the lowest hospital admission ratio for COPD (62.2 SAR); much lower than the national average.

Deaths from Respiratory Diseases

- 12.6.64 In 2018, with the exception of South Cambridgeshire, the proportion of yearly deaths caused by respiratory diseases in each local authority within the health baseline study area was broadly in line with England's national average (14.1%) (Ref 12-33). Of the local authorities within the health baseline study area, Huntingdonshire had the highest proportion of deaths attributed to respiratory diseases (15.9%), while South Cambridgeshire had the lowest (10.2%).

Long-term Illness or Disability

- 12.6.65 Data from the 2011 Census (Ref 12-31) shows that all local authorities within the health baseline study area had a lower proportion of the population living with a long-term health problem (illness) or disability than across England as a whole (17.6%). Compared with the other local authorities in the health baseline study area, South Cambridgeshire had the lowest population proportion living with a long-term health problem or disability (13.9%).
- 12.6.66 The ward of Bourn in South Cambridgeshire, which has a much younger population than the rest of the health baseline study area, had a significantly lower proportion of residents living with a long-term health problem or disability (8.6%) when compared to the rest of the health baseline study area.
- 12.6.67 The ward of Wyboston in Bedford, which has the largest population proportion aged over 65 within the health baseline study area, also had the highest population proportion living with a long-term health problem or disability (15.3%). However, this was still below the figure for Bedford (16.0%) and England as a whole (17.6%).

General Health Classification

- 12.6.68 Data from the 2011 Census (Ref 12-31) shows that all local authorities within the health baseline study area had a higher proportion of individuals reporting their general health as 'good' or 'very good' when compared to England's national average (81.4%). South Cambridgeshire had the highest population proportion living in 'good' or 'very good' health (86.2%).
- 12.6.69 Equally, all local authorities within the health baseline study area were shown to have a lower proportion of individuals reporting their general health as 'bad' or 'very bad' when compared to England's national average (5.4%). Compared with the other local authorities in the health baseline study area, Bedford had the highest population proportion living in 'bad' or 'very bad' health (4.6%).
- 12.6.70 The 2011 Census showed that the populations within the wards of Bourn in South Cambridgeshire and Gransden and The Offords in Huntingdonshire believed they were living in better general health than the rest of the health baseline study area. Only 2.2% of the population in Bourn and 2.9% of the population in Gransden and The Offords stated they were living in 'bad' or 'very bad' health, while 91.6% of the population in Bourn and 87.3% of the population in Gransden and The Offords were living in 'good' or 'very good' health.

Life Expectancy

- 12.6.71 Male life expectancy in all the local authorities within the health baseline study area is slightly above the national average for England (79.6 years) (Ref 12-32). At 82.8 years, South Cambridgeshire has the highest male life expectancy out of all local authorities within the health baseline study area.
- 12.6.72 Female life expectancy in all the local authorities within the health baseline study area is slightly above the national average for England (83.2 years) (Ref 12-32). At 85.7 years, South Cambridgeshire also has the highest female life expectancy out of all local authorities within the health baseline study area.

Deprivation

- 12.6.73 Out of the 317 local authorities in England, Central Bedfordshire and Huntingdonshire rank in the least deprived 25% of all local authorities for the Index of Multiple Deprivation (IMD) (Ref 12-35). South Cambridgeshire ranks 300th out of the 317 local authorities (where 1st is the most deprived) and is therefore in the 10% least deprived of all local authorities. Bedford on the other hand, is rated as the most deprived local authority within the health baseline study area, ranking 156th out of all local authorities in England (50% least deprived nationally).
- 12.6.74 None of the Lower Super Output Areas³ (LSOAs) in Central Bedfordshire, Huntingdonshire or South Cambridgeshire rank in the most deprived 10% of LSOAs nationally; 3.9% of LSOAs in Bedford rank in the most deprived 10%.
- 12.6.75 When assessing only the income deprivation domain indicator, no LSOAs in Central Bedfordshire, Huntingdonshire or South Cambridgeshire rank in the most deprived 10% of all LSOAs nationally; 3.9% of LSOAs in Bedford rank in the most deprived 10%.
- 12.6.76 When assessing only the health deprivation and disability domain indicator, no LSOAs in Central Bedfordshire, Huntingdonshire or South Cambridgeshire rank in the most deprived 10% of all LSOAs nationally; 6.8% of LSOAs in Bedford rank in the most deprived 10%.
- 12.6.77 Overall, 2019 deprivation statistics show that the level of deprivation is low within the health baseline study area. Comparatively, South Cambridgeshire is shown to be the least deprived local authority within the health baseline study area, while Bedford is shown to be the most deprived. **Table 12-14** shows the Local Authority health profiles.

³ A Lower Super Output Area (LSOA) is a geographic area. LSOAs are a geographic hierarchy designed to improve the reporting of small area statistics in England and Wales.

Table 12-14: Local authority health profiles

Health Indicator	Bedford	Central Bedfordshire	Huntingdonshire	South Cambridgeshire	England
Population (2018)	171,623	283,606	177,352	157,519	55,977,178
Population aged under 16 (2018)	21.0%	19.9%	18.4%	20.2%	19.2%
Population aged over 65 (2018)	17.6%	17.8%	19.9%	19.4%	18.2%
Prevalence of childhood obesity (age 10-11 years) (2018/19)	21.1%	14.9%	14.7%	11.2%	20.2%
Emergency Hospital Admissions for Chronic Obstructive Pulmonary Disease (COPD) (SAR*)	98.5	83.7	77.9	62.2	100.0
Proportion of deaths caused by respiratory diseases (2018)	13.5%	14.6%	15.9%	10.2%	14.1%
Population with a long-term health problem or disability (2011)	16.0%	14.4%	14.9%	13.9%	17.6%
General health classification - bad or very bad (2011)	4.6%	3.8%	4.0%	3.2%	5.4%
General health classification - good or very good (2011)	82.9%	84.6%	84.5%	86.2%	81.4%
Male life expectancy at birth (2016-2018) (yrs)	79.8	81	81.4	82.8	79.6
Female life expectancy at birth (2016-2018) (yrs)	83.5	84.3	84.4	85.7	83.2
IMD - Rank of average rank (2019)	156	264	247	300	-
IMD - Proportion of LSOAs in most deprived 10% nationally (2019)	3.9%	0.0%	0.0%	0.0%	-
Income deprivation - Proportion of LSOAs in most deprived 10% nationally (2019)	3.9%	0.0%	0.0%	0.0%	-

Health Indicator	Bedford	Central Bedfordshire	Huntingdonshire	South Cambridgeshire	England
Health deprivation - Proportion of LSOAs in most deprived 10% nationally (2019)	6.8%	0.0%	0.0%	0.0%	-

**SAR (Standardised Admission Ratio) is the ratio of the observed number of Admissions in an area to the number expected if the area had the same age-specific rates as England*

Source: ONS (2019), Mid-Year Population Estimates - Local Authority by Single Year Age; Public Health England (2019), Local Authority Health Profiles; Public Health England (2018), Local Health; ONS (2019), Mortality Statistics – Underlying Cause, Sex and Age; ONS (2011), 2011 Census; Ministry of Housing, Communities and Local Government (2019), English Indices of Deprivation 2019.

Health Determinants

12.6.78 Further determinants of health are outlined below including Air Quality, Noise Sensitivity, Landscape Amenity and Road Safety Information.

Air Quality

12.6.79 Air pollution is deemed to be one of the greatest environmental risks to the health of the UK public.

12.6.80 Air quality across the local authorities within the health baseline study area (Bedford, Central Bedfordshire, Huntingdonshire and South Cambridgeshire) is mostly very good or at least meets the air quality objective levels set by the government.

12.6.81 The main pollutant of concern in the health baseline study area is nitrogen dioxide (NO₂), the primary source of which is road traffic emissions. Pollutants build up in locations where traffic volumes are slow to disperse. For this reason, locations of the greatest concern for poor air quality are town centres and major road junctions.

12.6.82 Where an air quality objective set by the government is exceeded and identified at a receptor point, an Air Quality Management Area (AQMA) is declared.

12.6.83 An AQMA has been designated by Huntingdonshire District Council on St Neots' High Street, approximately 1.6 kilometres (1 mile) to the north of the Order Limits. A second AQMA has been designated by Central Bedfordshire Council along a section of the A1 immediately west of Sandy, approximately 1.8 kilometres (1.1 miles) south of the Order Limits.

12.6.84 The AQMAs within the health baseline study area are illustrated on **Figure 12.2** of the Environmental Statement [TR010044/APP/6.2].

12.6.85 Further information on Air Quality baseline assessment and impacts can be found in **Chapter 5, Air quality** of the Environmental Statement [TR010044/APP/6.1]

Noise Sensitivity

12.6.86 Sensitivity to noise needs to be considered during both the construction and operational phases of the Scheme.

- 12.6.87 Potentially sensitive noise receptors include residential properties in St Neots, Tempsford, Roxton, Chawston, Wyboston, Croxton, Eltisley and Cambourne. There are also potentially noise sensitive individual dwellings in the countryside, including some located immediately adjacent to the existing A428. As outlined in the Land Use and Accessibility baseline section, there are a number of community facilities in proximity to the Scheme. These community facilities include schools, nurseries, health centres, places of worship and village halls which have increased sensitivity to noise pollution.
- 12.6.88 Under the *Environmental Noise Directive* (END) (Ref 12-36), strategic noise mapping of major roads, railways, airports and agglomerations has been completed across England. Noise Important Areas (NIAs), are areas that are most exposed to noise. NIAs nearby to the Scheme are located on:
- The A1 between the existing Black Cat roundabout and Wyboston Interchange.
 - The A1 between Wyboston and Little Paxton.
 - The A1 to the south of the existing Black Cat Roundabout nearby to Church End.
 - The A1 between Church End and the north of Sandy.
 - The existing A428 approximately 1 kilometre (0.6 miles) east of the A428/B1428 Cambridge Road roundabout.
 - The existing A428 approximately 0.7 kilometres (0.4 miles) east of existing Caxton Gibbet roundabout.
 - Bedford Road between Great Barford and Roxton (in proximity to the A421 dual carriageway).
- 12.6.89 The NIAs within the health baseline study area are illustrated on **Figure 12.2** of the Environmental Statement [TR010044/APP/6.2].
- 12.6.90 Further information on the Noise baseline assessment and impacts can be found in **Chapter 11, Noise and vibration** of the Environmental Statement [TR010044/APP/6.1].
- Landscape Amenity
- 12.6.91 The landscape character of the health baseline study area is distinguished by three principal features: the broad meandering course of the River Great Ouse (low-lying floodplains); gently undulating landform (heavy clay soils supporting intensive arable farming); and scattered historic landscape features.
- 12.6.92 Within the health baseline study area, subtle variations in landform create a series of lowland plateaus divided by broad, shallow valley and ridge lines. The principal water course that passes through the health baseline study area is the River Great Ouse, which flows north to south and runs broadly parallel with the A1 from the existing Black Cat roundabout by Roxton and Tempsford to the southern edge of St Neots.

12.6.93 The Scheme does not cross any statutory designated landscapes such as National Parks or Areas of Outstanding Natural Beauty. Croxton Park is the only Registered Historic Park and Garden within the health baseline study area. It is located to the south of the existing A428 which forms the park's northern boundary.

12.6.94 As outlined in **Chapter 7, Landscape and visual effects** and **Chapter 9, Geology and soils** of the Environmental Statement [TR010044/APP/6.1], the primary land use within the health baseline study area is agriculture, comprising of mostly large-scale arable field with some smaller pockets of pasture located nearby to villages. Intensively farmed arable land makes up the majority of the landcover and vegetation within the health baseline study area.

Road Safety Information

12.6.95 In worst cases, incidents and collisions between vehicles and people using the UK's road network can cause serious injuries and death.

12.6.96 As shown in **Table 12-15**, across all local authorities within the health baseline study area, the number of people either killed or seriously injured (KSI) on England's roads per 100,000 population (2016-18) was worse than the national average. South Cambridgeshire's statistics for KSI per 100,000 population (63.6) were the worst across the health baseline study area.

Table 12-15: KSI statistics for local authorities within the health baseline study area

	Bedford	Central Bedfordshire	Huntingdonshire	South Cambridgeshire	England
Killed and seriously injured (KSI) casualties on England's roads 2016-18 per 100,000 population	44.5	49.5	50.5	63.6	42.6*

*Aggregated from all known lower geography values

Source: Public Health England, (2020); Local Authority Health Profiles

12.6.97 Road safety data within the health baseline study area has been published by the DfT (Ref 12-37), for the year 2018. The data shows all road traffic incidents attended by local police services that resulted in either a passenger or driver being killed or seriously injured. In total, there were 37 serious road traffic incidents within the health baseline study area during 2018, of which 31 resulted in at least one fatality. **Table 12-16** presents the serious road traffic incidents within the health baseline study area during 2018. The existing Caxton Gibbet roundabout and the existing A428 between Eaton Socon and Eynesbury are shown to have had the greatest number of serious road traffic incidents that resulted in a fatality.

Table 12-16: Road safety data within the health baseline study area

Road Name	Area	Total Road Traffic Incidents	Total Vehicles Involved	Incidents with Fatality, or Fatality and Severe Injury	Incidents with Only Severe Injury
A421	Roxton	2	4	2	0
Bedford Road	Roxton	2	3	1	1
A1	Tempsford	3	5	1	2
Existing Black Cat roundabout	Existing Black Cat roundabout	5	12	4	1
A1	Wyboston to Eaton Socon	3	7	3	0
Existing A428	Eaton Socon and Eynesbury	6	14	6	0
A1	Eaton Ford	2	4	2	0
B645	Eaton Ford	1	1	1	0
Existing A428	B1428 to Eltisley	6	14	4	2
B1040	Eltisley	1	2	1	0
Existing Caxton Gibbet Roundabout	Existing Caxton Gibbet roundabout	5	13	5	0
A1198 (Ermine Street South)	Papworth Everard	1	2	1	0
Total		37	81	31	6

Source: DfT, (2019); Road Safety Data

Future Baseline

Construction year baseline (2022)

12.6.98 The future baseline for the construction year (2022) of the Scheme comprises the current baseline conditions described in the previous sections of this chapter together with relevant planning applications that are implemented, started, or completed by 2022, which would constitute new sensitive receptors for the assessment of effects.

12.6.99 Developments resulting from relevant planning applications which are either under construction, or where construction has not started but would be completed by 2022 include:

- a. Potton Road Housing – Residential development of site for up to 79 dwellings and associated open space (ref: 16/01507/OUT).
- b. Wintringham – This is a mixed-use development comprising: residential development of up to 2,800 dwellings (C3), up to 63,500 sqm of employment development (B1-B8), district centre including shops, services, community and health uses (A1-A5, D1 & D2), local centre (A1-A5), temporary primary school, two permanent primary schools, open space, play areas, recreation facilities and landscaping, strategic access improvements including new access points from Cambridge Road and the existing A428, associated ground works and infrastructure (ref: 17/02308/OUT).
- c. Cambourne West – Development of up to 2,350 residential units including: affordable housing; retail, use classes A1-A5 (up to 1.04 ha); offices/light industry, use class B1 (up to 6.25ha); community and leisure facilities, use class D1 and D2 (up to 0.92 ha); two primary schools and one secondary school (up to 11 ha), use class D1; three vehicular access points including the extension and modification of Sheepfold Lane, a four arm roundabout provided on A1198/Caxton Bypass and an access point off the A1198, south of the Caxton Gibbet to serve the proposed employment uses; a network of segregated pedestrian and cycle routes; sustainable drainage system and other infrastructure; together with associated earth works, parking, open space, including equipped play, playing fields and landscaping (ref: S/2903/14/OL). Construction of this development will commence in 2021.
- d. Loves Farm – Development of up to 1,020 dwellings and up to 7.6ha of mixed uses including: a nursery/crèche (use class D1), public house (use class A4), hotel (use class C1), care accommodation (use class C2), employment uses (use class B1), a primary school (use class D1), formation of new access junctions onto Cambridge Road, connections with Loves Farm, on-site roads and pedestrian/cycle routes and other related infrastructure (ref: 1300388OUT).

12.6.100 Construction of the Wintringham development has begun including access routes into the site, new homes and a school. Construction of the Cambourne West development will commence in 2021 with approximately 150 to 220 houses expected to be completed each year until 2033.

12.6.101 Other than the presence of the identified forthcoming developments, the current baseline conditions for this assessment would not be likely to change substantially by the construction year (2022). It is acknowledged that businesses, agricultural facilities and community facilities may open and close, and the level of usage of community resources including PRoWs may change but this cannot be predicted with any accuracy.

Opening year baseline (2026)

- 12.6.102 The future baseline for the opening year (2026) of the Scheme comprises the current baseline conditions described in the previous sections of this chapter together with the relevant developments which would be constructed by 2026.
- 12.6.103 The opening year baseline includes the planning applications defined as being future baseline for the construction year (2022), as identified above, as well as those developments which would be under construction or not started in 2022 that are likely to be completed by 2026. Based upon current local planning application information, there are currently no additional developments other than those identified in the construction year future baseline which may be part of the baseline in the Scheme's opening year (2026).
- 12.6.104 It is anticipated that between 750 and 1,100 houses will have been constructed at the Cambourne West development by the opening year baseline (2026).
- 12.6.105 Other than the presence of the developments outlined in the construction year baseline, the baseline for the opening year (2026) is not likely to substantially change from the current baseline conditions. It is acknowledged that businesses, agricultural facilities and community facilities may open and close, and the level of usage of community resources including PRoWs may change but this cannot be predicted with any accuracy.

12.7 Potential impacts

Construction

Land use and accessibility

- 12.7.1 Potential impacts include land required temporarily and/or permanently from private property or housing, community land and assets including land or assets used for recreation (this comprises impacts to open space and nature, blue space e.g. rivers and play space) as well as development land and businesses resulting from the construction of the Scheme.
- 12.7.2 The construction of the Scheme could potentially impact on accessibility (both directly and indirectly) or result in severance for communities and people when accessing open space and nature; social, recreational and healthcare infrastructure; workplaces/employment opportunities and routes used by walkers, cyclists and horse riders.

Agricultural land holdings

- 12.7.3 The principal potential impacts on agricultural land holdings will occur during the construction of the Scheme and relate primarily to the temporary and permanent loss of agricultural land and severance.
- 12.7.4 The commercial agricultural land holdings within the study area are predominantly arable holdings that are able to withstand and adapt to a degree of change and disruption to their operations.

- 12.7.5 Where individual fields are bisected by the Scheme, every reasonable effort has been made to work with the relevant landowner or tenant to mitigate the effects of the Scheme and following construction leave workable field shapes and sizes for the landowner or tenant.
- 12.7.6 Discussions with landowners and tenants during the design period have ensured that access will be retained to all areas of agricultural land during and after construction. Mitigation measures including new and retained field accesses have been included where necessary.
- 12.7.7 Smaller land holdings to the west of the Scheme which do not make up part of larger commercial agricultural holdings will have proportionally more of their land required for the Scheme which could compromise their current operations, even though many of these are not currently commercially viable agricultural holdings.

Walkers, cyclists and horse riders (WCH)

- 12.7.8 Potential impacts during construction include:
- Permanent land take associated with the Scheme which may affect PRoWs and walking and cycling routes.
 - Temporary land take, closure or diversion of PRoWs and walking and cycling routes during construction.
 - Temporary disruption to PRoWs during construction resulting in severance or increased journey times to access community facilities.
 - Temporary changes in access to bus stops and hence public transportation.

Human health

Environmental conditions relating to human health

- 12.7.9 As a result of construction activities, the Scheme has the potential to have direct impacts on the health, well-being and the quality of life of the local population due to potential changes in access to community land and assets, activity of walkers, cyclists and horse riders, air quality, and noise and vibration. Impacts could occur in either a residential or commercial/employment setting.

Operation

Land use and accessibility

Private property; community land and assets and development land and businesses

- 12.7.10 Operation of the Scheme will not require any further land from residential or private properties, community land and assets as well as development land and businesses located within the study area.

12.7.11 Potential impacts on severance and accessibility during the operation of the Scheme include:

- a. 'Changes to travel patterns' via sustainable modes of transport such as walking and cycling, through the provision use of new routes for walkers, cyclists and horse riders and changes to accessibility.
- b. Impacts on accessibility to local centres and areas where healthcare facilities are located resulting from reduced or increased delays, congestion and potential changes in severance.
- c. Impacts on local employment opportunities and activity through changes in access to employment resulting from reduced or increased delays for motorised users, reduced or increased congestion and potential changes in severance.
- d. Impacts on access to open space and recreation space including impacts through provision of new walking and cycling routes.

Agricultural land holdings

12.7.12 As the permanent removal of land from agricultural use or permanent severance of farm holdings will occur during and as a consequence of the construction of the Scheme, there are no further effects to consider as a result of the operation of the Scheme.

Walkers, cyclists and horse riders (WCH)

12.7.13 Potential impacts during operation of the Scheme include:

- a. Changes to severance and connectivity and local travel patterns through provision of new walking, cycling and horse-riding routes.
- b. Changes to the safety of existing WCH routes within the study area.
- c. Changes to journey times for WCHs accessing community resources, through the provision of new WCH routes, connections and crossing provisions.

Human Health

Environmental conditions relating to human health

12.7.14 The Scheme will result in changes to the levels of traffic congestion on the road network through the distribution of traffic. This could potentially have effects on noise and air quality and may potentially result in a positive, negative or neutral outcome on the health of local communities. Impacts could occur in either a residential or commercial/employment setting.

12.7.15 Through the improvements, the Scheme is also likely to improve road safety for both vehicular travellers and for walkers, cyclists and horse riders.

12.8 Design, mitigation and enhancement measures

12.8.1 The Scheme has been designed, as far as possible, to avoid and minimise impacts and effects relating to population and human health through the process of design development (refer to **Chapter 2, The Scheme** and **Chapter 3, Assessment of alternatives** of the Environmental Statement [TR010044/APP/6.1], and by embedding measures into the design for the Scheme.

12.8.2 A number of essential measures have been identified, which would be implemented by the Principal Contractor to reduce the impacts and effects that construction and operation of the Scheme would have in relation to population and human health.

Embedded Mitigation Measures

12.8.3 A full list of embedded mitigation measures are outlined within **Table 2-1** in **Chapter 2, The Scheme** [TR010044/APP/6.1]. Those relating to this Chapter are summarised below.

Agricultural land holdings

12.8.4 During the development of the design, the measures incorporated to avoid or mitigate adverse impact on agricultural land holdings include:

- a. Amendments to the alignment of the Scheme in response to representations from individual landowners;
- b. Amendments to the design of the Scheme to reduce land-take from individual land holdings;
- c. The provision of replacement access routes and points to severed areas of agricultural land.

12.8.5 Where unrestricted agricultural uses are to be resumed on land disturbed during the construction of the Scheme, the design objective is to avoid any reduction in long term capability, which would downgrade the quality of the disturbed land, through the adoption of good practice techniques in handling, storing and reinstating soils on that land.

Walkers, cyclists and horse riders

12.8.6 Measures incorporated into the design of the Scheme to avoid or mitigate adverse impacts associated with the severance or loss of routes used by WCH are outlined below. All permanent diversions are shown in **Figure 2.2** of the Environmental Statement [TR010044/APP/6.2]. Measures include:

- d. Footpath A10 would be stopped up and diverted away from the upgraded A421 onto a dedicated farm access track which runs broadly parallel with the realigned Roxton Road. The access tracks and footpath would join onto Roxton Road with cycle and foot users using the new shared cycle path that runs adjacent to the realigned Roxton Road.

- e. Footpath 7 and 8 would be stopped up and rerouted to join the new combined cycle/footpath that allows movement in both an easterly and westerly direction.
- f. School Lane would be stopped up at the eastern end of the lane and be designated as a bridleway for the use of horses, bikes and pedestrians. The newly established bridleway would run the length of the lane and merge with the new combined cycle/ footpath on Roxton Road link between 'Roxton Road and 'The Lane'.
- g. Footpath 194/55 to 1/9 will be severed by the Scheme. The Scheme will provide a pedestrian underpass where Hen Brook passes under the new dual carriageway. This underpass would maintain current movements along this PRoW.
- h. Footpath 194/52 – 1/17 will be stopped up then rerouted to the east parallel to the dual carriageway alignment and over a new pedestrian crossing bridge. The PRoW would then merge with a combined footpath maintenance track running parallel to the south of the new dual carriageway. The combined footpath would provide access to the southern parts of the stopped-up Footpath 194/51, 194//53 and 194/54, known as Footpath 1/20, 1/19, 1/17, in addition to connecting to Hen Brook Footpath 1/9 and Footpath 1/16.
- i. Bridleway 1/12 to 1/18 will be severed by the Scheme. However, the Scheme would re-establish this route by means of a dedicated bridleway / accommodation overbridge, with a dedicated gated / corral system and passing places where appropriate.
- j. Footpath 59/1 to 278/9 will be severed and stopped up as a result of the Scheme. The footpath would be re-routed to the west for approximately 450m and onto the new Toseland Bridge. The new route of the PRoW would then return back on itself and run parallel to the new dual carriageway for approximately 450m and reconnect back into the existing Footpath 59/1 and continue in a southerly direction.
- k. Bridleway 74/6 will be severed by the Scheme. An underpass would be constructed to accommodate the bridleway under the new dual carriageway.
- l. An existing cycleway from the A1198 Ermine Street to Brockley Road will be lost as a result of the Scheme. The Scheme would re-establish this cycle path route as part of the shared Private Means of Access (PMA) route for agricultural purposes located from a spur from the northern roundabout of the new dumbbell junction arrangement.

- m. Provision of new footways within the verges of the following roads and junctions; Roxton Road link (north), Roxton Road link (south), BP filling station service road, Combined Kelpie Marina access road, Cambridge Road junction (including sections of the realigned A428), Realigned Toseland Road, Eltisley link (including sections of the realigned A428) and Caxton Gibbet junction. Temporary alternative provision will be provided for these routes during construction of the Scheme.

Air Quality

- 12.8.7 The Scheme has been designed to maintain or increase the distance between properties and traffic where possible, to maintain traffic flows on the surrounding road network and to remove traffic from the existing A428 onto the new dual carriageway, to mitigate against any air quality impacts at sensitive receptors.

Noise

- 12.8.8 A number of measures will be applied to contain road traffic noise and reduce effects on noise sensitive receptors including, positioning of sections of the Scheme below ground level, use of low noise surfacing and the use of earth bunds.

Essential Mitigation Measures

Accessibility

- 12.8.9 Where temporary or permanent access to private property or housing, community land and assets including open space and nature; social, recreational and healthcare infrastructure as well as development land, and businesses, is severed as a result of the Scheme, the appropriate alternative temporary or permanent access will be provided.
- 12.8.10 In particular, proposed measures will prevent employees working night shifts or new patients who may require admission during night hours from being cut-off from Eltisley Manor (Nouvita Healthcare). These measures are outlined in the Outline Construction Traffic Management Plan [TR010044/APP/7.4]. Clear communication will be established with the care home at an early stage, which will allow the care home to be adequately informed of any operations or traffic management measures that may affect the routes the care home uses for transporting residents and staff. Alternative plans for access will be made as necessary.

Walkers, Cyclists and Horse Riders

- 12.8.11 Essential mitigation measures that will be applied to PRow during the construction period include:
 - a. In the locations where advanced construction works are in proximity to PRow, the works areas will be fenced off using temporary “Heras” type panels or similar, to segregate the site work areas from the public.
 - b. Where these construction works areas sever PRow the Principal Contractor will consult and agree how to manage these routes with the appropriate local authority.

- c. Where practical and feasible a local diversion route via an adjacent PRow or locally around the perimeter of the fenced work site will be identified and temporary signage erected to direct members of the public around these routes.
- d. Alternatively, if a short duration closure is required and no local diversion can be provided, then appropriate signage will be erected at either end of the footpath closure to ensure that the public are informed.

12.9 Assessment of significant effects

- 12.9.1 The prediction of impacts and the assessment of effects (and their significance) during construction and operation of the Scheme on population and human health has taken account of the embedded and essential mitigation measures presented in Section 12.8.

Construction

Land use and accessibility

Existing property

- 12.9.2 Brook Cottages, located along the western side of the A1 to the north of the existing Black Cat roundabout, will be demolished as a result of the construction of the Scheme. Formed of two private dwellings, Brook Cottages is a Grade II listed building. For the purposes of this assessment it has been assumed, as a worse case, that both of the dwellings are currently inhabited by tenants who will be required to find alternative accommodation prior to the works commencing. Where required, the tenants will be provided support to find alternative accommodation by working with them and the local authorities to identify alternative housing options in the area that fulfil their needs. The loss of Brook Cottages as a heritage asset is considered in **Chapter 6, Cultural heritage** of the Environmental Statement [TR010044/APP/6.6]. For the purposes of this population and health assessment, the loss of property will have an impact on the tenants. However, the loss is not considered to be critical in the decision-making process given that the scale of loss is less than five properties, at which scale there would be no effect on the community.
- 12.9.3 A residential property located above the commercial premises of A1 Keen Screens will be demolished as a result of the Scheme. For the purposes of this assessment it has been assumed, as a worse case, that this residential property is currently inhabited by tenants who will be required to find alternative accommodation prior to the works commencing. Where required, any tenants will be provided support to find alternative accommodation by working with them and the local authorities to identify alternative housing options in the area that fulfil their needs. For the purposes of this population and health assessment, the loss of property will have an impact on the tenants. However, the loss is not considered to be critical in the decision-making process given that the scale of loss is less than five properties, at which scale there would be no effect on the community.

- 12.9.4 No other private property in the study area is directly affected by the Scheme. However, as a result of the construction of the Scheme, particularly construction works surrounding Black Cat junction, people travelling by car to access private property within the villages of Tempsford, Roxton, Chawston and Wyboston may experience a temporary very low increase in usual journey time (approximately five minutes) depending upon their direction of travel. No private property in these villages will be severed from the surrounding local area due to construction works for the Scheme. The sensitivity of these village receptors is very high as they cover over 5ha and encompass numerous residential properties. However, as any increase to usual journey time is very low and road closures will occur at off-peak times the magnitude of impact is assessed to be negligible. Overall, the temporary construction works surrounding Black Cat junction are assessed to have a temporary slight adverse effect, which is not significant, upon private property within the villages of Tempsford, Roxton, Chawston, Sandy and Wyboston.
- 12.9.5 As a result of the construction of the Scheme, the existing A428 between Caxton Gibbet junction and the Cambridge Road junction will experience closures for 43 months between August 2022 and March 2026. Access to private properties in the villages of Croxton and Eltisley will therefore be restricted for users travelling by car and via the existing A428. However, temporary closures along the existing A428 will only likely occur between 21.00hrs and 06.00 hrs. For car users travelling from the east (from Caxton Gibbet junction) to Croxton and Eltisley, avoiding use of the existing A428 would result in an increase in usual journey time of approximately 10 to 12 minutes. For car users travelling from the west (from St Neots) to Croxton and Eltisley, avoiding use of the existing A428 would result in an increase in usual journey time of approximately 8 to 11 minutes. Should local traffic need to access private property in Croxton or Eltisley using the existing A428 when the road is closed, a system will be put in place which will enable local traffic access; for example, by implementing a construction vehicle service that will guide public vehicles through the construction works. The sensitivity of Caxton and Eltisley as receptors is very high as they cover over 5ha and encompasses numerous residential properties. However, as any increase to usual journey time is low and road closures will occur at off-peak times the magnitude of impact is assessed to be negligible. Overall, the temporary construction works along the existing A428 are assessed to have a temporary slight adverse effect, which is not significant, upon private property within the villages of Croxton and Eltisley.
- Community land and assets*
- 12.9.6 No community lands or assets will be directly affected by the construction of the Scheme. However, the construction of the Scheme will result in some indirect accessibility impacts upon community lands and assets across the study area. These impacts are assessed below.
- 12.9.7 Several community assets within the study area lie within the villages of Tempsford, Roxton, Chawston and Wyboston. These villages are located close to each other and it is likely that users would travel between the villages to access community assets. The community assets in these villages include:

Roxton Lower School, Tempsford Methodist Church (Ebenezer Chapel), Roxton Congregational Church, St Mary Magdalen Church, Roxton Village Hall, Stuart Memorial Hall, and The Village Hall (Morris Walk). A collective assessment for these community assets has been made given the proximity of the assets to each other and similar levels of sensitivity and magnitude. As a result of construction of the Scheme, particularly construction works surrounding Black Cat junction, people accessing the community assets by car within the villages of Tempsford, Roxton, Chawston and Wyboston may experience a temporary very low increase in usual journey time (approximately five minutes). In a worst-case scenario if travel from Roxton to a community asset in Tempsford is required between 21.00hrs and 06.00hrs during an A1 closure period, this would result in an increase in usual journey time of approximately seven minutes. None of the community assets in question will be severed from the local population as construction works will occur at off-peak times and temporary access to community facilities for local traffic would also be provided if and where required. Furthermore, alternative community assets are available for use in the local area. The sensitivity of the receptor is therefore assessed to be negligible. The magnitude of impact is assessed to be negligible due to the introduction of very minor severance. Overall, the effect of the temporary construction works surrounding Black Cat junction upon people accessing community assets in the villages of Tempsford, Roxton, Chawston and Wyboston during construction is assessed to be neutral.

- 12.9.8 Eltisley Manor (Nouvita Healthcare), a 24-hour mental healthcare facility, located on the existing A428 Cambridge Road to the west of Croxton, can only be accessed by using the existing A428 between St Neots and the exiting Caxton Gibbet roundabout. During the temporary closure of the existing A428 between the Caxton Gibbet junction and the Cambridge Road junction (for 43 months between August 2022 to March 2026), access to this community asset will be restricted. Closure of this section of the existing A428, which is required to access Eltisley Manor (Nouvita Healthcare), will only occur between 21.00hrs and 06.00hrs. This will enable visitors to continue to visit patients during the standard visiting hours. To prevent employees working night shifts or new patients who may require admission during night hours from being cut-off from the facility, a system will be put in place whereby local traffic will be able to access the facility; for example, by implementing a construction vehicle service that will guide public vehicles through the construction works. As access to the facility will not be completely severed and provision of access will be maintained, the magnitude of impact is assessed to be minor adverse. The sensitivity of the receptor is assessed to be medium as there are limited alternative mental healthcare facilities available within nearby communities. Overall, the closure of the existing A428 between the existing Caxton Gibbet roundabout and Cambridge Road roundabout is assessed to have a temporary slight adverse effect, which is not significant, upon Eltisley Manor (Nouvita Healthcare).
- 12.9.9 The Cade Pavilion (a cricket and social club that is available for community hire) and St Pandionia and St John the Baptists Church in Eltisley will have their access temporarily restricted from communities to the north of the existing A428 during any temporary existing A428 road closure between the Caxton Gibbet

junction and the Cambridge Road junction. The timing of the road closures will minimise the likelihood of an effect being experienced by a community asset user as the assets are most likely used during the day. The sensitivity of community assets within Eltisley is therefore assessed to be low. In a worst-case scenario where someone needs to travel from Yelling to a community asset in Eltisley between 21.00hrs and 06.00hrs during the closure period, this would result in an increase in usual journey time of approximately 15 minutes. As access to the facility will not be completely severed and access restrictions will occur at night-time only for users originating from communities to the north of the existing A428, the magnitude of impact is assessed to be minor adverse. Overall, the closure of the existing A428 between Caxton Gibbet junction and Cambridge Road junction is assessed to have a temporary slight adverse effect, which is not significant, upon the Cade Pavilion and St Pandionia and St John the Baptists Church in Eltisley.

- 12.9.10 Newton Community Primary School and Bluebell Day Nursery (located on the same site) in Eltisley serve the villages of Eltisley, Croxton, Toseland, Graveley, Papworth St Agnes and Yelling. Any temporary existing A428 road closure between the Caxton Gibbet junction and Cambridge Road junction will restrict access to Newton Community Primary School and Bluebell Day Nursery from villages to north of the existing A428, as many users of these community assets use the existing A428 as part of their usual travel route. However, the temporary closure of the section of the existing A428 will only occur between 21.00hrs and 06.00hrs. The magnitude of impact is assessed to be negligible given accessibility to the school and the nursery is unlikely to be required between 21.00 and 06.00hrs. The sensitivity of the receptor is assessed to be low, as although the school and nursery are used daily, the works will only restrict access from the existing A428 during hours when these facilities are unlikely to be operating. Overall, the effect of the temporary closure of the existing A428 between Caxton Gibbet junction and Cambridge Road junction upon users of Newton Community Primary School and Bluebell Day Nursery is assessed to be neutral.

Recreational facilities

- 12.9.11 Except for recreational facilities and activities over the River Great Ouse, no recreational facilities will be directly affected by the construction of the Scheme. During construction of the River Great Ouse viaduct, construction activities will take place over the River Great Ouse that will require its closure whilst works are undertaken. The works will take place over a period of 8 months during which approximately 10 weeks of river closures will be required. The works for the River Great Ouse viaduct will not be continuous although closures will largely be undertaken during weekdays in the daytime with measures put in place to ensure that the river can be reopened outside of working hours. It is possible that up to four weekend closures will be required during construction. In a worst-case scenario, the river would be closed for no longer than 24 hours for one activity and so this would be the maximum period of delay for river traffic passing the worksite. Additionally, to ensure that the public is aware of the closures of the River Great Ouse, notices will be published prior to any closures.

- 12.9.12 The River Great Ouse is largely used for recreational activities such as boating and fishing as well as for events such as the Bedford River Festival, which involves a number of events including a range of river activities. However, the closures would exclude the weekend of the Bedford River Festival, which takes place once every other year. The Environment Agency have provided information regarding the navigational use of the River Great Ouse with the information indicating that the river is not heavily used. During peak periods in the summer, particularly on weekends, approximately 50 crafts would pass through the Order Limits each day. There are no alternative waterways that can be used for recreational activities in the area and hence the sensitivity of recreational activities on the River Great Ouse is assessed to be medium. Given the closures will be during daytime and largely on weekdays, the magnitude of impact is determined to be moderate adverse. Overall the temporary closure of the River Ouse is assessed to be moderate adverse which is significant.

Existing businesses

- 12.9.13 To the south of St Neots and located just to the west of the A1 along Blunham Lane, the construction of the Scheme will require use of the existing entrance to a small group of businesses. This group of businesses along Blunham Lane covers an area of approximately 5.5ha; the sensitivity of the receptor is therefore very high. The existing access to the site will be maintained and there will be no impact upon the operational ability of the businesses at this site. Given the access to the site will remain available during construction, the magnitude of impact is determined to be no change. Overall, the effect of the temporary land take and sharing of the entrance to the businesses along Blunham Lane is assessed to be slight adverse, which is not significant.
- 12.9.14 As a result of the Scheme, the existing public access to Kelpie Marina will be permanently closed. Kelpie Marina covers an area of approximately 1.74ha; the sensitivity of the receptor is therefore high. The Scheme will provide permanent alternative access to Kelpie Marina via a track from Bedford Road, which will require a bridge to be constructed over the northbound A1 to the south of the existing Black Cat junction. This alternative access route will be opened before the existing access is closed meaning there will be no impact upon the operational ability of the business. The new access route will not increase journey times for users accessing the site. Given the provision of the alternative access route, the magnitude of impact is determined to be negligible. Overall, the temporary effect of the permanent closure of the existing public access to Kelpie Marina is assessed to be slight adverse, which is not significant.
- 12.9.15 As a result of the Scheme, the existing access to the BP Services on the A1 to the north of the Black Cat Junction will be permanently closed. The BP Services covers an area of approximately 0.7ha; the sensitivity of the receptor is therefore medium. The Scheme will provide permanent alternative access to the BP services and this alternative access route will be opened before the existing access is closed meaning there will be no impact upon the operational ability of the business. The new access route will not increase journey times for users accessing the services. Given the provision of the alternative access route, the magnitude of impact is determined to be negligible. Overall, the temporary effect

of the permanent closure of the existing access to the BP services is assessed to be negligible as existing access will be retained until the permanent alternative access is operational.

- 12.9.16 Parking provision for the retail businesses clustered at Roxton Garden Centre will be restricted by temporary land take on the east side of the garden centre. The area of land temporarily taken will be returned to its former use following the completion of this section of the Scheme. The retail businesses clustered at Roxton Garden Centre cover an area of approximately 1.69ha; the sensitivity of the receptor is therefore high. The Scheme will mitigate any impacts by providing temporary access points to the Roxton Garden Centre retail cluster and enabling local traffic flow along Bedford Road. There will be no impact upon the operational ability of the retail businesses at Roxton Garden Centre as the existing level of access will be maintained via temporary access points. Based on the provision of temporary access points to the site and continued flow of local traffic on Bedford Road, the magnitude of impact is determined to be negligible. Overall, the accessibility limitations to retail businesses at Roxton Garden Centre caused by temporary land take along Bedford Road and works around Black Cat junction are assessed to have a temporary slight adverse effect, which is not significant.
- 12.9.17 The redevelopment of the existing Black Cat roundabout will result in the permanent closure of all existing businesses and infrastructure at Black Cat Services, including the Travelodge Hotel, Shell Petrol Station and A1 Keen Screens. The businesses at Black Cat Services cover an area of approximately 0.56ha; the sensitivity of the receptor is therefore medium. As a result of the Scheme, the businesses at Black Cat Services will be acquired and demolished. However, taking into account the availability of alternative premises and employment opportunities within the study area, the displacement or possible loss of jobs is considered to be modest compared to the level of economic activity and opportunity in the area. The magnitude of impact is therefore determined to be minor adverse. Overall, the Scheme is assessed to have a permanent slight adverse effect arising from the closure of the businesses at Black Cat Services, which is not significant.
- 12.9.18 The Anchor Hotel (also known as the Vanilla Alternative) will have access restricted as a result of temporary road closures on the A1. The Anchor Hotel covers an area of approximately 0.1ha; the sensitivity of the receptor is therefore medium. Access will be restricted on the A1 due to full weekend closures and weekday night closures and weekend night closure required for construction works. Access to the Anchor Hotel will be maintained at all times. Due to the nature of the business access may be required during night-time and weekend closures however as access will be retained at all times the magnitude of impact has therefore been determined to be negligible. Overall, the temporary effect of the accessibility limitations to The Anchor Hotel due to temporary closures of the A1 is assessed to be negligible.
- 12.9.19 Businesses located at Arlington Road Industrial Estate and Little Barford Power Station will have access restricted as a result of temporary road closures along the existing A428. The businesses located at this site cover an area of

approximately 35.34ha; the sensitivity of the receptor is therefore very high. Access will be restricted in a westbound direction from the Caxton Gibbet junction to Cambridge Road junction and will occur between 21.00hrs and 06.00hrs from August 2022 to March 2026. Some of the businesses operating at this location, such as Biffa St Neots (waste disposal) and RWE Generation UK (power station), may operate on a 24/7 basis and require use of the existing A428 between 21.00hrs and 06.00hrs. The businesses located at Arlington Road Industrial Estate and Little Barford Power Station have some importance to the local economy and it is likely that a moderate number of local jobs are supported by these businesses. During the temporary road closure of the existing A428 between Caxton Gibbet junction and St Neots a diversion will be implemented along the A1198, A14 and A1. By following this diversion, Heavy Goods Vehicles (HGVs) travelling westbound from Caxton Gibbet junction to Arlington Road Industrial Estate and Little Barford Power Station will have their usual journey time increased by approximately 15 minutes. This is assessed to have a negligible impact on the operational activity of businesses as a 15 minute journey time increase is low when considering the total journey lengths being travelled to this site and particularly when considering that the road closure will only be at night. Employees travelling westbound from the Caxton Gibbet junction to Arlington Road Industrial Estate and Little Barford Power Station in private smaller vehicles will be able to travel via a different route through the villages of Toseland and Yelling increasing usual journey time by approximately 10 minutes, which is low. The magnitude of impact has therefore been determined to be negligible. Overall, the accessibility limitations at Arlington Road Industrial Estate and Little Barford Power Station caused by temporary road closures of the existing A428 between Caxton Gibbet junction, the Cambridge Road junction and St Neots are assessed to have a temporary slight adverse effect, which is not significant.

- 12.9.20 During the construction period, Whitehall Farm Industrial Estate and a hand car wash business, which are located along the existing A428 nearby to Croxton, will have restricted access due to works on Toseland Road and the existing A428. Whitehall Farm Industrial Estate and the hand car wash business cover an area of approximately 1.83ha; the sensitivity of the receptor is therefore high. Business activity at Whitehall Farm Industrial Estate is known to include electrical manufacturing and car services. As a result of the Scheme, the existing A428 will be temporarily closed between Caxton Gibbet junction and Cambridge Road junction between 21.00hrs and 06.00hrs from August 2022 to March 2026. This will prevent access to Whitehall Farm Industrial Estate and the hand car wash business from the existing A428; however, as the road closure will occur outside of usual working hours it is not likely to impact upon the operation of businesses at this site. Should local traffic need to access Whitehall Industrial Estate and the nearby hand car wash business using the existing A428 when the road is closed, a system will be put in place whereby local traffic will be able to access the site. Local traffic can also access the site through local roads via Yelling, Croxton, Eltisley etc. The magnitude of impact is determined to be negligible as the level of access to the businesses will be maintained via temporary access provisions. Overall, the accessibility limitations at Whitehall Farm Industrial Estate and the

nearby hand car wash business caused by the Scheme's temporary closure of the existing A428 between Caxton Gibbet junction and the Cambridge Road junction are assessed to have a temporary slight adverse effect, which is not significant.

- 12.9.21 Redevelopment of the existing Caxton Gibbet roundabout will result in the permanent closure of a hand car wash business which is located on the north side of the existing A428. This hand car wash business covers an area of approximately 0.02ha; the sensitivity of the receptor is therefore medium. As a result of the Scheme, the hand car wash business will be acquired and demolished. However, taking into account the availability of alternative premises and the total number of employment opportunities within the study area, the displacement or possible loss of jobs is considered to be modest compared to the level of economic activity and opportunity in the area. The magnitude of impact is therefore determined to be minor adverse. Overall, the Scheme is assessed to have a permanent slight adverse effect arising from the closure of the hand car wash business by the existing Caxton Gibbet roundabout, which is not significant.

Development land for business purposes

- 12.9.22 Construction of the Scheme will require partial temporary land take from the Wintringham development site, which is part of a designated Strategic Expansion Location in *Huntingdonshire's Local Plan to 2036* (Ref 12-18). This site, which will be an extension of St Neots, is allocated as a mixed-use development that will bring forward up to 2,800 homes with associated social and community infrastructure, as well as 63,500 sqm of employment development land (use classes B1-B8). In addition, the Wintringham site will also deliver a 3ha local centre (A1 to A5) comprising retail floorspace (A1), a supermarket (A1) and food and drink uses (A2 to A5). Due to the size of the area of development land that is allocated to employment, the sensitivity of the receptor is very high. Approximately 170,000 sqm of the Wintringham development site (10.5%) will be temporarily required during the construction phase, which will be used as a main project office compound for the Scheme. This temporary land take will occur for 42 months between October 2022 and March 2026. Only part of the designated employment zone at the Wintringham site will be temporarily acquired by the Scheme and there is no plan to develop the employment zone until after Highways England has finished its temporary occupation. Moreover, there is an agreement in place between Highways England and the developer of the Wintringham site that the hardstanding etc. from the Scheme's main project office compound will be left in place following occupation so that it can be used for the construction of the site's employment zone. The magnitude of impact is therefore assessed to be no change. Overall, the effect of temporary land take upon the employment zone at the Wintringham development site is assessed to be neutral.

Agricultural land holdings

- 12.9.23 Construction of the Scheme will require temporary land take from 32 agricultural land holdings within the study area. A total of 182.3042 ha of agricultural land will be required for the construction of the Scheme which will be used for purposes

such as borrow pits, storage areas and construction compounds. A total of 293.3ha of agricultural land will be required permanently for the Scheme, this includes land required for borrow pits.

- 12.9.24 The agricultural land holdings to the east of the Scheme are predominantly large arable holdings of medium sensitivity that are able to adapt to some level of disruption to their operations. Access to fields on these holdings is required on a reasonably frequent basis. These holdings will experience temporary and permanent loss of agricultural land although, given the area of loss in relation to the scale of these holdings, this will not compromise the overall viability of the farm businesses. As such, the magnitude of the land loss is assessed to be minor adverse.
- 12.9.25 Although these holdings will be severed during and following construction of the Scheme, access provision has been made within the design of the Scheme and in consultation with the landowners to all parcels of severed agricultural land, such that the magnitude of severance is assessed to be minor adverse. The measures to mitigate severance include; the provision of overbridges and underbridges, retained field accesses, and rights of access across maintenance and emergency vehicle access tracks.
- 12.9.26 There are 13 large agricultural land holdings predominantly in arable use which will experience temporary and permanent slight adverse effects, which are not significant.
- 12.9.27 Agricultural land holdings at the western end of the Scheme are mostly smaller parcels of land that do not make up part of larger commercial agricultural businesses. These holdings vary between low sensitivity and negligible sensitivity. Land parcels in this area are likely to experience a major magnitude of impact (for holdings which have negligible sensitivity) and a moderate magnitude of impact (for holdings which have a low sensitivity), with smaller land parcels more likely to be required in their entirety during the construction phase.
- 12.9.28 The remaining 19 identified land holdings are likely to experience temporary and permanent slight adverse effects, which are not significant due to moderate and major impacts from the area of land required from low sensitivity and negligible sensitivity holdings respectively.

Walkers, cyclists and horse riders (WCH)

- 12.9.29 During the construction phase it will be necessary to temporarily close some sections of footpaths and bridleways. Temporary closures during the construction phase of the Scheme will be necessary to ensure that segregation is maintained between construction activities and members of the public. As a result of the construction required for the Scheme, there will also be permanent changes along some of the WCH routes within the study area.

Temporary effects

- 12.9.30 The eastern end of PRoW A10/10 (approximately 186m, 14% of the total route length), which leads from Colesden Road to Roxton Road, will be temporarily closed for the duration of the works (16 months from April 2023 to July 2024) to demolish the existing Roxton Road bridge and construct the new Roxton Road

link and new Roxton Road bridge. Once the new Roxton Road bridge and Roxton Road link are open and the associated works including landscaping are complete, the temporary closure will be lifted. The results of the WCH surveys show that PRoW A10/10 is mostly used for recreational purposes, although use is not frequent; sensitivity is therefore assessed to be medium. During the temporary closure, users of PRoW A10/10 travelling east to west will not have a reasonable diversion available. However, as the route is used for recreation rather than access, there are a number of alternative routes in close proximity to PRoW A10/10 which can be used for recreational purposes. The magnitude of impact is determined to be minor adverse. Overall, the closure of the eastern end of PRoW A10/10 will have a temporary slight adverse effect, which is not significant, upon users of the route.

- 12.9.31 During construction, the southern end of PRoW 7 (approximately 188m, 26% of the total route length), which leads from Chawston Lane in Chawston to Roxton Road, will be temporarily closed for the duration of the works (16 months from April 2023 to July 2024) to demolish the existing Roxton Road bridge and construct the new Roxton Road link and new Roxton Road bridge. Once the new Roxton Road bridge and Roxton Road link are open and the associated works including landscaping are complete, any temporary closure will be lifted. PRoW 7 is a footpath that runs from Chawston Lane in Chawston to the A421. The route then continues along an undesignated path, which is overgrown and on a steep embankment, to the point where it joins Roxton Road just to the north of Roxton Road bridge. The results of the WCH surveys show that no users were recorded on PRoW 7. It is evident that the route is not meaningful and has fallen into disuse; sensitivity is therefore assessed to be low. During the temporary closure, users of PRoW 7 travelling east to west will not have a reasonable diversion route available. However, there are a number of alternative routes in close proximity to PRoW 7 which can be used for recreational purposes. The magnitude of impact is determined to be minor adverse. Overall, the effect of the temporary closure of the southern end of PRoW 7 is assessed to be neutral due to the lack of usage recorded on the route.
- 12.9.32 During construction, the southern end of PRoW 8 (approximately 275m, 30% of the total route length), which leads from Colesden Road in Chawston to Black Cat Services and the existing Black Cat roundabout, will be temporarily closed for the duration of the works (16 months from April 2023 to July 2024) to demolish the existing Roxton Road bridge and construct the new Roxton Road link and new Roxton Road bridge. Once the new Roxton Road bridge and Roxton Road link are open and the associated works including landscaping are complete any temporary closures will be lifted. PRoW 8 leads from Chawston to Black Cat Services but as these services will be demolished as a result of the Scheme, PRoW 8 will not be used to access the Black Cat Services. However, the results of the WCH surveys show that PRoW 8 is used frequently for the purpose of recreation; the sensitivity of PRoW 8 is therefore assessed to be medium. During construction, PRoW 8 will still be accessible up to the perimeter of the Order Limits. Alternative nearby PRoWs, which are not impacted by the Scheme, are available for the purpose of recreation. The magnitude of impact is therefore determined to be minor adverse. Overall, the temporary closure of the southern

end of PRow 8 is assessed to have a temporary slight adverse effect, which is not significant, upon users of the route.

- 12.9.33 To the east of Eynesbury across the Wintringham Development Area, PRow 194/55, which becomes PRow 1/9 at the existing A428, will be impacted by the construction of the Scheme. Temporary closure of this footpath will be required for the duration of the construction works within the Order Limits (42 months from October 2022 to March 2026). To the north of the new dual carriageway this closure will be from the back of the verge on the existing A428. To the south of the new dual carriageway this closure will be required from the Order Limits. The total length of the PRow within the Order Limits, which will be temporarily closed is 1,142m, 47% of the route length. A temporary diversion could be provided along the northern perimeter of the Order Limits adjacent to the existing A428 whereby PRow 194/55 and 194/52 are linked, this would enable footpath users to 'loop' back towards Eynesbury to complete their journey. The diversion to link the two PRows will be 641m. The results of the WCH surveys show that the footpath along PRow 194/55 and PRow 1/9 is used for the purpose of recreation and sensitivity is therefore assessed to be medium. The Ouse Valley Way (a regional trail) is an alternative route that could be used for the purpose of recreation by the residents of Eynesbury and eastern St Neots. On the basis that a temporary diversion is provided to link PRows 194/55 and 194/52, the recreational value of the footpath will be retained although there will be limited access to the wider network of PRows in the area. Should a temporary diversion not be provided between PRows 194/55 and 194/52, users of PRow 194/55 could still walk back and forth along the PRow from St Neots in order to complete a recreational journey. The magnitude of impact is therefore assessed to be minor adverse. Overall, the temporary closure of sections of PRows 194/55 and 1/9 is assessed to have a temporary slight adverse effect, which is not significant, upon users of the route.
- 12.9.34 To the east of Eynesbury across the Wintringham Development Area, PRow 194/52, which becomes PRow 1/17 at the existing A428, will be impacted by the construction of the Scheme. Temporary closure of this footpath will be required for the duration of the construction works within the Order Limits (42 months from October 2022 to March 2026). To the north of the new dual carriageway this closure will be from the back of the verge on the existing A428. To the south of the new dual carriageway this closure will be required from the Order Limits. The total length of the PRow within the Order Limits, which will be temporarily closed is 507m, 31% of the total route length. If agreed with the relevant stakeholders, a temporary diversion could be provided along the northern perimeter of the Order Limits adjacent to the existing A428 whereby PRow 194/52 and 194/55 are linked, this would enable footpath users to 'loop' back towards Eynesbury to complete their journey. The diversion to link the two PRows will be 641m. The results of the WCH surveys show that the footpath along PRow 194/52 and PRow 1/17 is used very infrequently for the purpose of recreation; sensitivity is therefore assessed to be low. From St Neots, the PRow begins from an industrial site which may suggest why the PRow is used infrequently; furthermore, users of this route have to cross the A428 without using a footbridge or underpass which may be why other nearby PRows are preferred. The Ouse

Valley Way (a regional trail) is an alternative route that could be used for the purpose of recreation by the residents of Eynesbury and eastern St Neots. On the basis that a temporary diversion is provided to link PRow 194/52 and 194/55, the recreational value of the footpath will be retained although there will be limited access to the wider network of PRow 194/55 and 194/52, users of PRow 194/52 could still walk back and forth along the PRow from St Neots in order to complete a recreational journey. Therefore, the magnitude of impact is assessed to be minor adverse. Overall, the effect of the temporary closure of sections of PRow 194/52 and 1/17 within the Order Limits upon users of the route is assessed to be neutral.

- 12.9.35 A section of PRow 1/18, which becomes PRow 237/2 and forms part of a bridleway that runs from the existing A428 to Toseland, will be closed and diverted over a new accommodation bridge as part of the permanent works design of the Scheme. In addition to this, a temporary closure of a further part of the bridleway (approximately 471m, 36% of the total route length) will be necessary for the duration of the works within the Order Limits (24 months from August 2022 to July 2024). PRow 1/18 is used recreationally meaning that sensitivity is assessed to be medium. The vast majority of users of this route originate from Toseland and complete a round trip. During the temporary closure of the section of PRow 1/18 within the Order Limits, users will still be able to complete a round trip by using suitable alternative nearby recreation routes such as PRow 1/14 and PRow 273/13. Furthermore, PRow 237/1, a bridleway which originates in Toseland and takes users north, offers an alternative route for horse riders. The magnitude of impact is therefore assessed to be negligible. Overall, the effect of the temporary closure of PRow 1/18 within the Order Limits upon users of the route is assessed to be neutral.
- 12.9.36 A section of PRow 278/7, which becomes PRow 59/1 and forms part of a footpath that runs from the existing A428 at Croxton to Yelling, will be closed and the route diverted westwards over the new Toseland Road bridge as part of the permanent works design of the Scheme. In addition to this, a temporary closure of the sections of PRow 278/7 and PRow 59/1 (approximately 1,884m, 61% of the total route length) within the Order Limits will be required for the duration of the mainline construction works (34 months from August 2022 to May 2025). If required, this closure could be extended north to the footpath's junction with PRow 278/9 to remove the temporary 'dead end' section. During the WCH survey period, no users were recorded on PRow 59/1 or the section of PRow 278/7 that falls within the Order Limits; sensitivity is therefore assessed to be low. Any potential footpath users originating from Yelling would still be able to complete a recreational journey by completing a 'loop' to the north of the Order Limits perimeter by using PRow 278/7 (up to the point of closure), PRow 278/9 and PRow 278/8. Given an alternative recreational route is available, the magnitude of impact is assessed to be negligible. Overall, the effect of the temporary closure of the sections of PRow 278/7 and 9/1 within the Order Limits upon users of the route is assessed to be neutral.

- 12.9.37 A section of PRoW 74/6, which becomes PRoW 278/3 and forms part of a bridleway that runs from the existing A428 nearby to Eltisley to Yelling, will be closed and the route diverted through a new underpass as part of the permanent works design of the Scheme. In addition to this, a further temporary closure of PRoW 74/6 (approximately 312m, 11% of the total route length) within the Order Limits will be required for the duration of the works (13 months from August 2022 to September 2023). There is no proposal to divert this route during construction of the Scheme. The results from the WCH surveys show that PRoW 74/6 is used frequently for daily recreation. Several horse riders were recorded during the WCH survey period, with the vast majority recorded as completing round trips from Hill Top Equestrian Centre. As a result of the PRoW's usage, the sensitivity of the route is assessed as being high. The WCH survey results indicate that when a horse rider reaches the southern end of PRoW 74/6, they turn back to complete a round trip rather than cross over the existing A428 and into Eltisley. Due to the closure of a section of PRoW 74/6 within the Order Limits, this would mean that a round trip for a horse rider originating from Hill Top Equestrian Centre would decrease in length by approximately 11%. It should also be noted that PRoW 278/4, which originates in Yelling, offers a potential alternative nearby bridleway route for local horse riders. Given the length of the journey that users will still be able to make during the construction phase of the Scheme, as well as the alternative routes available, the magnitude of impact is assessed to be minor adverse. Overall, the Scheme is assessed to have a temporary slight adverse effect, which is not significant, upon users of PRoW 74/6.
- 12.9.38 PRoW 73/17 is a footpath/cycleway by the existing Caxton Gibbet roundabout. It commences from the eastern side of the northern arm of the A1198 and runs alongside, but fully segregated from, the northern verge of the existing A428 dual carriageway. PRoW 73/17 then re-joins the existing St Neots Road/Brockley Road and crosses the Cambourne junction into Cambourne. The length of this cycle path is approximately 980m. During Phase 1 of the construction works of the Caxton Gibbet roundabout (19 months from August 2022 to February 2024) the existing route will be maintained, but during Phase 2 of the Scheme (17 months from May 2024 to October 2025) the route will be closed for a period of 17 months. The results from the WCH survey show that PRoW 73/17 is used for both daily commuting purposes and recreational activity and it is assumed that this route is largely used by residents living in Papworth Everard travelling to work in Cambourne. The sensitivity of the receptor is therefore assessed to be medium because although the route is used for commuting, the total commuter usage is very low (6 commuter journeys recorded during the WCH survey period) suggesting that only a small proportion of the local population are using the route. There are no suitable alternative routes for walkers or cyclists to use between Papworth Everard and Cambourne. During construction Phase 1, the magnitude of impact will be no change, as the route will remain open for use. Overall during construction Phase 1, the temporary effect of the Scheme upon users of PRoW 73/17 is assessed to be neutral.
- 12.9.39 During construction Phase 2 of the Scheme, the sensitivity of the receptor remains as medium due to the usage recorded during the WCH survey period. Under a worst-case scenario where PRoW 73/17 is closed during construction of

Phase 2 of the Scheme without adequate accessibility provision, the magnitude of impact is assessed to be major adverse. Overall, the Scheme is assessed to have a temporary moderate adverse effect, which is significant, upon users of PRoW 73/17 during construction Phase 2 of the Scheme.

- 12.9.40 The footway along the eastern side of the A1 Great North Road, which leads to the BP filling station, will be impacted by the construction of the Scheme. There are a small number of residential properties and businesses located close by to this footway. The footway may be used by local residents or employees of nearby businesses to access the bus stop adjacent to the Wait for the Wagon pub, which is opposite the BP filling station and can be reached by crossing a footbridge. As the footway may be used as part of a route to access employment, the sensitivity of the footway along the eastern side of the A1 which leads to the BP filling station is assessed to be high. During construction temporary provision for users will be provided, which will be directly comparable to existing facilities, enabling users to complete their usual journeys. The magnitude of impact is therefore assessed to be negligible. Overall, construction of the Scheme is assessed to have a temporary slight adverse effect, which is not significant, upon users of the footway along the eastern side of the A1 which leads to the BP filling station.
- 12.9.41 There are also several other non-designated footways within the study area that will be impacted by the construction of the Scheme. These include; Roxton Road link (north), Roxton Road link (south), Combined Kelpie Marina access road, Cambridge Road junction (including sections of the realigned A428), Realigned Toseland Road, Eltisley link (including sections of the realigned A428), and Caxton Gibbet junction. As these routes are close by to communities and are likely used for recreational purposes the sensitivity of the receptor is assessed to be medium. During construction temporary provision to these non-designated routes will be provided hence enabling users to complete their usual journeys. The magnitude of impact is therefore assessed to be negligible. Overall, construction of the Scheme is assessed to have a temporary slight adverse effect, which is not significant, upon users of these non-designated routes.

Permanent effects

- 12.9.42 PRoW A10/10 is a footpath that runs from Colesden Road to the west of Chawston to a farm access track to the west of Roxton Road nearby to Roxton Road bridge. As a result of the Scheme, an existing non-designated farm access track that forms part of the usual journey route taken by users of PRoW A10/10 will be formalised up to Roxton Road. Formalisation of the route will improve user experience and the recreational value of the PRoW. A more formal route could also improve perceptions of safety along the PRoW. There will be no difference to usual journey length for users of the route meaning that the magnitude of impact is assessed to be no change. The results of the WCH surveys show that PRoW A10/10 is mostly used for recreational purposes, although use is infrequent; the sensitivity of the route is therefore assessed to be medium. Overall, the permanent effect of the Scheme upon users of PRoW A10/10 is assessed to be neutral.

- 12.9.43 PRow 7 is a footpath that runs from Chawston Lane in Chawston to the A421. The route then continues along an undesignated path, which is overgrown and on a steep embankment, to the point where it joins to Roxton Road just to the north of Roxton Road bridge. The Scheme design will see PRow 7 shortened by approximately 106m to a point where it will meet a new 4m wide footway/cycle track along the new Roxton Road link. From here users could travel to Roxton across the new Roxton Road bridge. This new route for PRow 7 is not a diversion, it formalises and improves the route that people would use to reach Roxton Road; the magnitude of impact is therefore assessed to be minor beneficial. During the WCH survey period, no users were recorded on PRow 7 meaning the sensitivity of the route is assessed to be low. Overall, it is assessed that the Scheme will have a permanent slight beneficial effect, which is not significant, upon users of PRow 7.
- 12.9.44 PRow 8 is a footpath that runs from Chawston Lane in Chawston to the existing Black Cat Services. WCH surveys show that the main use of the PRow is recreation. The southern end of PRow 8 currently terminates at a filling station at Black Cat Services, however, the services will be demolished as part of the Scheme and it will not be possible to reach the same point. The Scheme design will see PRow 8 shortened by approximately 275m to a point where it meets a new 4m wide footway/cycle track along the new Roxton Road link. From here users could travel to Roxton Garden Centre across the new Roxton Road bridge; this travel route would be 337m longer than the previous route users would have taken across the existing Black Cat roundabout. The diversion takes users along a new footpath/cycleway which is further away from major roads, hence increasing recreational value and route safety. The magnitude of impact has therefore been assessed as negligible. The results of the WCH surveys show that PRow 8 is used frequently for daily recreation purposes; the sensitivity of the route is therefore assessed to be high. Overall, the Scheme is assessed to have a permanent slight beneficial effect that is not significant, upon users of PRow 8.
- 12.9.45 National Cycling Network (NCN) Route 12 is a 110.5-mile cycling route, which connects Enfield Lock in north London to Spalding. As a national trail that is likely used for both recreation and commuting i.e. from Roxton to St Neots, the sensitivity is assessed to be very high. A small section of NCN Route 12 runs across the existing Roxton Road bridge (approximately 470m), which as a result of the Scheme will be redirected across the new Roxton Road bridge along a new 3m wide footpath/cycleway. The change in journey length to this section of NCN Route 12 will be minimal (20m), meaning the magnitude of impact is assessed to be negligible. Overall, the effect of the Scheme upon users of this section of NCN Route 12 is assessed to be slight adverse, which is not significant.
- 12.9.46 To the east of Eynesbury and the Wintringham Development Area, PRow 1/9, which is reached using PRow 194/55 beginning in Eynesbury, will be permanently diverted by the Scheme. PRow 1/9 will be diverted through an underpass underneath the new dual carriageway, which will enable users to safely cross the new dual carriageway. This diversion will increase the length of

the route by 2m; therefore, the magnitude of impact is assessed to be negligible. The results of the WCH surveys show that the footpath along PRoW 194/55 and PRoW 1/9 is used for the purpose of recreation; the sensitivity of the route is therefore assessed to be medium. Overall, the effect of the Scheme upon users of PRoW 1/9 and PRoW 194/55 is assessed to be neutral.

- 12.9.47 To the east of Eynesbury and the Wintringham Development Area, PRoW 1/17, which is reached using PRoW 194/52 beginning in Eynesbury, will be permanently diverted by the Scheme. PRoW 1/17 will be diverted eastwards to a footbridge which will enable users of the PRoW to safely cross the new dual carriageway. This diversion will increase the length of the route by 604 metres. The results of the WCH surveys show that the footpath along PRoW 194/52 and PRoW 1/17 is used very infrequently for the purpose of recreation; the sensitivity of the route is therefore low. The 604m increase in route length is considered to have a negligible impact upon users as the route is used recreationally. However, the diverted footpath will direct users along a route that is adjacent to a major road, hence impacting the recreational experience of the user and the recreational value of the route. Based upon these two factors, the magnitude of impact has been assessed to be moderate adverse. Overall, the Scheme is assessed to have a permanent slight adverse effect, which is not significant, upon users of PRoW 1/17 and PRoW 194/52.
- 12.9.48 PRoW 1/18, which becomes PRoW 237/2 to the north of the new dual carriageway, is a bridleway that runs from High Street in Toseland to the existing A428. At its southern end, PRoW 1/18 will be built across and hence severed by the new dual carriageway. To mitigate the impacts of this, the Scheme will divert the bridleway over a new bridge that crosses the new dual carriageway. This diversion will increase the length of the route by 112 metres. Results from the WCH surveys show that PRoW 1/18 is used for recreational activity; the sensitivity of the route is therefore assessed to be medium. The increase in journey length is assessed to have a negligible magnitude of impact upon users as the route is used recreationally. Furthermore, the diversion only accounts for a small percentage of the length of the whole bridleway. Overall, the permanent effect of the Scheme upon users of PRoW 1/18 is assessed to be neutral.
- 12.9.49 PRoW 278/7 is a recreational footpath that runs from High Street in Yelling to PRoW 59/1 located to the south of the new dual carriageway alignment and takes users travelling southwards to Croxton by the existing A428. PRoW 278/7 will be built across and permanently severed by the new dual carriageway. To mitigate the impact of the Scheme, the PRoW will be permanently realigned to the east to the new Toseland Road Bridge, which will cross over the new dual carriageway, enabling users to continue along their usual journey route. However, the redirection of PRoW 278/7 across Toseland Road Bridge will increase journey length by 1,929m or 1,326m if users choose to continue along Toseland Road rather than re-joining PRoW 278/7 and PRoW 59/1. The diverted footpath will direct users along a route that is adjacent to a major road which could impact on the recreational value of the route. Based on these two factors, the magnitude of impact upon PRoW 278/7 is assessed as major adverse.

- 12.9.50 It should be noted that PRoW 278/7 connects to PRoWs 278/8 and 278/9 (footpaths) and as the route is used largely for recreational purposes, many users may be completing a journey 'loop' which does not cross over the new dual carriageway alignment. There are also several alternative PRoWs north of Yelling which can be accessed for recreational purposes and connect to a wider network towards Hilton and Offord D'Arcy.
- 12.9.51 The results of the WCH survey for the section of PRoW 278/7 that will be built across and permanently severed by the new dual carriageway showed that there were no users on the PRoW during the WCH survey period. The PRoW is used for recreation and does not provide any direct access to employment sites or educational and community facilities. The sensitivity of the route is therefore assessed to be low. Overall, the Scheme is assessed to have a permanent slight adverse effect, which is not significant, upon users of PRoW 278/7.
- 12.9.52 PRoW 74/6 is a bridleway that runs from Eltisley to PRoW 278/3 to the north of the existing A428, which leads to High Street in Yelling. PRoW 74/6 will be built across and hence severed by the new dual carriageway. To mitigate the impact of this, the Scheme will permanently divert the bridleway underneath the new dual carriageway alignment via an underpass adjacent to West Brook Tributary. This diversion will increase the length of the route by 11m; the magnitude of impact is therefore assessed to be negligible. The increase in route length accounts for a very small percentage of the length of the PRoW, which is approximately 2,831m, and will have no discernible effect on a recreational journey. The results of the survey show that PRoW 74/6 is used frequently for the purpose of recreation, with many equestrian users originating from Hill Top Equestrian Centre in Yelling; the sensitivity of the route is therefore assessed to be high. Overall, the permanent effect of the Scheme upon users of PRoW 74/6 is assessed to be slight adverse, which is not significant.
- 12.9.53 PRoW 73/17 is a footpath/cycleway by the existing Caxton Gibbet roundabout. The route commences from the eastern side of the northern arm of the A1198 and runs alongside, but fully segregated from, the northern verge of the existing A428 dual carriageway. It then re-joins the existing St Neots Road/Brockley Road and crosses the Cambourne junction into Cambourne. The length of this cycle path is approximately 980m. As a result of the Scheme this footpath/cycleway will be closed and rebuilt slightly to the north in a similar position that will enable cyclists to safely navigate the Caxton Gibbet junction. The Scheme would rebuild this cycle path route as part of the shared PMA route for agricultural purposes located from a spur from the northern roundabout of the new Caxton Gibbet junction. This new location for the footpath/cycleway will still enable users to complete their usual journey and whilst the exact change in route length is not known at this stage, any change will not be substantial. The new location of the footpath/cycleway navigates Caxton Gibbet junction by essentially cutting the corner between the A428 and A1198 (Ermine Street South) meaning usual journeys may decrease in length. The magnitude of impact is therefore assessed to be negligible. The results from the WCH survey show that PRoW 73/17 is used for both commuting purposes and recreational activity although overall usage is infrequent. The sensitivity of PRoW 73/17 is assessed to be medium

because although the route is used for commuting, the total commuter usage is very low (6 commuter journeys recorded during the WCH survey period). Overall, the permanent effect of the Scheme upon users of PRow 73/17 is assessed to be neutral.

Human health

Accessibility

- 12.9.54 Accessibility and severance effects are outlined in the above Land Use and Accessibility assessment section (paragraphs 12.9.2 to 12.9.53) for community, educational, recreational and health facilities. The sensitivity of the population to change is assessed to be low in line with indicators recorded in the human health baseline assessment.
- 12.9.55 The severance and accessibility effects identified at these assets and areas of community land could have a negative outcome upon the health and well-being of the population within the health baseline study area. A particular concern is the effect that severance from community assets may have upon mental health and wellbeing, as people may be unable to connect with their usual social networks and community activities.
- 12.9.56 However, the provision of mitigation measures such as diversions and traffic management measures would ensure that accessing facilities remains possible. Severance and accessibility issues resulting from the Scheme at these identified facilities has therefore been assessed to have a neutral health outcome.

Open and green space, blue space, and play space

- 12.9.57 During construction, traffic management areas, temporary working and storage areas, material stockpiles, haul roads and provision for site compounds are expected. The sensitivity of the population to change is assessed to be low in line with indicators recorded in the human health baseline assessment. Existing open, and natural and play spaces would be retained and remain usable during construction, with any changes to access being mitigated.
- 12.9.58 During construction of the River Great Ouse viaduct, construction activities will take place over the River Great Ouse that will require its closure whilst works are undertaken. The River Great Ouse is largely used for recreational activities including boating and fishing and there are no other alternatives in the local area hence making the sensitivity of the population who use the River Great Ouse for recreational activities medium. Closure of the river during construction may result in a negative outcome upon the health and well-being of the local population, specifically with regard to access to recreational activities and the associated social networks and community activities.
- 12.9.59 No impact on the amenity of open, natural and play spaces for users have been reported.
- 12.9.60 No further land will be required from open and green spaces, blue spaces and play spaces during construction of the Scheme.
- 12.9.61 Changes to journey times, local travel patterns, and certainty of route for WCHs would arise from the temporary closures and diversions of PRowS through direct

land take and provision of access routes required for the construction of the Scheme, this may affect accessibility to open, natural and play spaces.

- 12.9.62 Through mitigation measures, such as temporary diversions to access routes and PRow access to open and green spaces, blue spaces and play spaces during the Scheme, construction would be maintained and so the effect on human health is assessed to have a neutral health outcome. No amenity impacts have been identified at open and green spaces, blue spaces and play spaces therefore resulting in a neutral health outcome.

Physical activity

- 12.9.63 The construction phase would require a number of closures and diversions to the existing PRow network at locations directly affected by the Scheme. The sensitivity of the population to change is assessed to be low in line with indicators recorded in the human health baseline assessment.
- 12.9.64 A significant temporary moderate adverse effect upon users of PRow 73/17 (paragraph 12.8.28) during construction Phase 2 of the Caxton Gibbet junction has been assessed. Users of this route will not have access to the PRow during construction Phase 2 which will therefore impact their ability to undertake physical exercise, resulting in a negative health outcome.
- 12.9.65 However, diversions/other relevant access points would mitigate any potential impact on all other WCH routes impacted by the Scheme resulting in a neutral health outcome on physical activity and active travel for WCHs.
- 12.9.66 Construction traffic may impact on some journeys made by pedestrians, cyclists and horse riders in the local area as an increase in traffic could deter individuals from participating in physical activity or active travel. However, these effects would be minimised through measures set out within the required traffic management plans therefore resulting in a neutral health outcome.

Air quality

- 12.9.67 During construction, emissions from construction dust, HGVs and construction traffic effects would occur, although they would be temporary in nature. Additional vehicle movements have the potential to increase concentrations of pollutants including nitrogen dioxide and PM₁₀ at receptors near the Scheme. The sensitivity of the population to change is assessed to be low in line with indicators recorded in the human health baseline assessment. All receptors within the air quality assessment study area (outlined in Chapter 5) are predicted to experience concentrations of nitrogen dioxide under the relevant Air Quality Objectives in all the modelled construction scenarios. Additionally, the construction dust assessment concludes that there is no likely significant air quality effect for human health within the assessment study area (outlined in Chapter 5).
- 12.9.68 Therefore, in respect of the air quality assessment conclusion, there would be no significant effects during the construction phase.

- 12.9.69 Potential impacts on air quality, would be managed through the use of best practice mitigation measures outlined within the First Iteration EMP **[TR010044/APP/6.8]**.
- 12.9.70 As a result, the effect of the Scheme on air quality as a determinant of human health during construction is assessed to have a neutral health outcome.
- Noise and vibration*
- 12.9.71 During construction, the Scheme would result in some temporary noise and vibration impacts from construction works. The sensitivity of the population to change is assessed to be low in line with indicators recorded in the human health baseline assessment.
- 12.9.72 The assessment in respect of construction noise concludes that the effects of construction works in the vicinity of A1 between 9 and 25 Great North Road; The Lane, Nagshead Lane and Chawston Lane; Roxton Road and Roxton Garden Centre Road; Greenacres; Bedford Road; School Lane in the proximity of the southern A1 works; Rectory Farm; Potton Road in proximity of the new dual carriageway; Cambridge Road and Wintringham Road in proximity of the Cambridge Road Junction northern and southern alignment works;; Ermine Street in proximity to the northern Caxton Gibbet dumbbell; and St Neots Road in proximity to the tie-in point between the Scheme and the existing A428 at Caxton Gibbet east will result significant adverse construction noise effects.
- 12.9.73 Once specific details of the construction works are available, the potential to reduce the magnitude of construction noise impacts, for example, through the use of localised site hoarding, will be determined through the requirements in the First Iteration EMP **[TR010044/APP/6.8]**. In some locations where noise exceedances are small this may result in the removal of significant effects.
- 12.9.74 According to the Noise and Vibration assessment (Chapter 11), there is a potential for combined significant adverse effects from construction noise and vibration at the following receptors; 64 to 68 Great North Road (alongside southbound A1), parallel to both sides of the A1 between The Lane and Black Cat junction along parts of The Lane, Nags Head Lane and Chawston Lane in proximity to the new Link between Roxton Road and The Lane, where the new Roxton Road re-alignment ties into the existing Roxton Road, Greenacres, at the new turning head on School Lane, to the north east of the new alignment of Barford Road, along Potton Road in proximity to the new Scheme alignment, at the southern alignment of the new Cambridge Road junction and along the A1198 to the north of the new Caxton Gibbet junction (Iway Inn).
- 12.9.75 During construction, additional traffic would be generated by construction activity. Night-time road closures and diversion routes are also proposed and are detailed in the Outline Construction Management Plan **[TR010044/APP/7.4]**. Some existing routes could be subject to an increase in noise traffic level due to diverted traffic and identified as likely to experiences likely significant adverse effects during construction. The noise and vibration assessment conclude that significant adverse construction traffic noise effects are identified at all noise sensitive properties within 25 metres of the proposed diversion routes due to night-time closures requiring diversions.

- 12.9.76 As a result, the effect of the Scheme on noise and vibration as a determinant of human health during construction will result in a negative health outcome.

Operation

Land use and accessibility

Private property and housing, community land and assets and businesses.

- 12.9.77 The operation of the Scheme would not require land permanently from residential properties, commercial properties and community land and assets located within the study area. Therefore, as the Scheme has no impact on private property and housing, community land and assets as well as businesses during operation no effects have been assessed.
- 12.9.78 The Scheme will require the permanent relocation of the existing bus stops located on the northbound and southbound carriageways of the A1 at Wyboston footbridge. The northbound bus stop will be moved approximately 180m to the north of the footbridge. The southbound bus stop will be moved 400m north.
- 12.9.79 The Scheme will provide an alternative permanent access to Kelpie Marina. The existing access to Kelpie Marina via the A1 will be removed and provided via a new permanent access constructed over the northbound A1, south of Black Cat junction, forming a new route between Bedford Road and Kelpie Marina. Due to the size of the Boat Yard the sensitivity of the receptor is assessed to be high. The permanent change to the access to Kelpie Marina will cause a minimal diversion to users and therefore the magnitude of impact is assessed to be negligible. Therefore, the effect of the permanent change of access to Kelpie Marina is assessed to be slight adverse, which is not significant.
- 12.9.80 The Scheme will provide an alternative permanent access to the BP Services located on the A1. The existing access to the BP Services via the A1 will be removed and provided via a new permanent access, which will improve visibility for those exiting the services making the new access safer for road users. Due to the size of the BP Services the sensitivity of the receptor is assessed to be medium. The permanent change to the access to the BP services will cause a minimal diversion to users and the magnitude of impact is therefore assessed to be negligible. Overall, the effect of the permanent change of access to the BP services is assessed to be negligible.
- 12.9.81 The Scheme will not require any further permanent changes to access to private and residential properties, commercial properties or community land and assets located within the study area and no further effects have been assessed. It is likely that users of the bus stop would be local residents living on The Lane, Nagshead Lane and the Great North Road to access services, facilities and employment opportunities in the local area. For users using the southbound services, access to facilities includes places of worship and the primary school in Roxton. For users using the northbound services access includes facilities in Eaton Socon. The bus route is the main form of public transport in the area. The sensitivity of the receptor is assessed to be high as the bus stop may be used by local residents to access employment. Whilst the bus stops are being permanently relocated, access to these bus stops will be retained with a slight

increase in journey distance to the new bus stop locations. The magnitude of impact is therefore assessed to be minor adverse. Overall, the permanent effect of the relocation of bus stops on the A1 is assessed to be minor adverse, which is not significant as adequate access to the bus stop is retained.

- 12.9.82 The operation of the Scheme would result in changes to traffic flows on the route and surrounding roads such that the Scheme would improve local connectivity to community facilities, particularly facilities located in Roxton, Chawston, Wyboston and the more urban area of St Neots. The Scheme is assessed to have a permanent slight beneficial effect, which is not significant, upon local connectivity to community facilities in Roxton, Chawston, Wyboston and St Neots.

Development land

- 12.9.83 There are no other planning applications or permissions affected by the land required for the operation of the Scheme, therefore no further effects have been assessed.

Agricultural land holdings

- 12.9.84 Agricultural land would be lost during the construction phase of the Scheme. There would be no further effects on agricultural land during operation of the Scheme.

Walkers, cyclists and horse riders

- 12.9.85 As a result of the Scheme, several new footpaths, cycleways and bridleways will be introduced within the study area. These are shown on **Figure 2.2** of the Environmental Statement [TR010044/APP/6.2]. Introduction of such WCH routes can bring many benefits to a local population, including increased access to community facilities, improved safety whilst travelling, encouragement to take part in recreational activity and increased opportunity to travel using sustainable transport modes.
- 12.9.86 As part of the Scheme, School Lane in Roxton would be stopped up at its eastern end and designated as a formal PRow and bridleway for the use of WCH. The newly established bridleway would run the length of School Lane. It would then run along a new 4m wide track that provides public access to Kelpie Marina. At this point it will merge with the new combined footpath/cycleway that extends from the new Roxton Road link to Bedford Road by Roxton Garden Centre. The designation of School Lane as a bridleway and provision of a new track that provides access to Kelpie Marina and Bedford Road may encourage active travel in the local population and increase recreational and physical activity. The bridleway is expected to be used for both recreational purposes as it links to the wider PRow network in the area, as well as for access to Roxton, Kelpie Marina and to the Roxton Garden Centre. The sensitivity of the receptor is assessed to be medium because the route is expected to mainly be used by WCH for recreational purposes. The magnitude of impact is determined to be minor beneficial because the new bridleway will improve safety and recreational experience for local WCH users, as well as improving access to the wider PRow network. Overall, the Scheme is assessed to have a permanent slight beneficial

effect, which is not significant, upon users of the new designated bridleway along School Lane.

- 12.9.87 The Scheme will introduce a new 2m wide section of footway next to a new bus shelter on the A1 Great North Road just to the north of The Lane in Chawston. The new bus shelter will replace the existing bus stop nearby to this location which lies approximately 180m to the south. The new wider section of footway that will be introduced will ensure safety for users accessing the bus stop as the footpath and bus stop are adjacent to a major road. It is likely that the bus stop would be used by local residents to access services, facilities and employment opportunities in the local area. The bus route is the main form of public transport in the area. The sensitivity of the receptor is assessed to be high as the bus stop may be used by local residents to access employment. The magnitude of impact is determined to be negligible due to the limited increase in journey distance to the new bus stop location. For some users, the position of the new bus stop will be closer to their homes and for others it will become further away. Overall, the permanent effect of the introduction of the new 2m wide footway and bus stop location is assessed to be neutral.
- 12.9.88 A new 4m wide continuous footpath/cycleway will be introduced between Chawston and Roxton, with the northern end of the route beginning on The Lane in Chawston and the southern end terminating at School Lane in Roxton. This new route will enable pedestrians and cyclists to travel safely between the villages of Wyboston, Chawston and Roxton. The Scheme therefore provides the means for the local population to travel via sustainable transport options when making short local journeys, for instance, when accessing community facilities in neighbouring villages. This new footpath/cycleway will be used for recreational purposes as it links to the wider PRoW network, as well as for access to community assets and services between the villages of Chawston and Roxton. The sensitivity of the receptor is assessed to be medium as it is assumed that the footpath/cycleway will be mainly used for the purpose of recreation. The magnitude of impact is determined to be minor beneficial because the new footpath/cycleway will improve safety and recreational experience for local WCH users travelling between Chawston and Roxton, as well as improving access to the wider PRoW network. Overall, the introduction of this footpath/cycleway between Chawston and Roxton is assessed to have a permanent slight beneficial effect upon users, which is not significant.
- 12.9.89 The footway along the eastern side of the A1 Great North Road, which leads to the BP filling station, will be replaced by a 2m wide footpath/cycleway. There are a small number of residential properties and businesses located close by to the location of this new footway. The new footway may be used by local residents or employees of nearby businesses to access the bus stop adjacent to the Wait for the Wagon pub, which is opposite the BP filling station and can be reached by crossing a footbridge. As the footway may be used as part of a route to access public transport, the sensitivity of the footway along the eastern side of the A1 which leads to the BP filling station is assessed to be high. The magnitude of impact is determined to be minor beneficial because the new footpath/cycleway will improve safety and recreational experience for local WCH users accessing

public transport. Overall, construction of the Scheme is assessed to have a permanent slight beneficial effect, which is not significant.

- 12.9.90 A new 3m wide footpath/cycleway will be introduced at the new Cambridge Road junction, which will enable users to navigate two new roundabouts associated with the Scheme. Users of this footpath/cycleway will be able to travel along it between St Neots and the existing A428 up until the point at which the footpath/cycleway ends just to the north of PRow 1/13. PRow 1/13 runs north to south from the existing A428 to PRow 1/17 in the parish of Abbotsley. Provision of this new footpath/cycleway may encourage active travel within the local population in turn increasing recreational and physical activity. It also increases access to the wider PRow network for people living in St Neots, which may encourage local people to increase recreational activity. The sensitivity of the receptor is assessed to be medium as it is assumed that the footpath/cycleway will be mainly used for the purpose of recreation. The magnitude of impact is assessed to be minor beneficial as the new footpath/cycleway provides a safer route for users to access PRow 1/13 than the narrower footpath alongside the existing A428. The Scheme is therefore assessed to have a permanent slight beneficial effect, which is not significant, upon users of this new footpath/cycleway.
- 12.9.91 A new 2m wide footpath/cycleway will be introduced along Toseland Road, which adjoins the existing A428 by Whitehall Farm Industrial Estate. This new pathway begins at the existing A428 and will end just to the north of the new Toseland Road bridge which crosses the new dual carriageway. As previously mentioned in the WCH route construction effects section (section 12.9.36), this footpath/cycleway may be used by users of PRow 278/7 as they are diverted from their usual travel route in order to cross over the new dual carriageway. No users were recorded along PRow 278/3 during the WCH survey period but it is considered that the route will be predominantly used for recreational purposes; the sensitivity of the receptor is therefore assessed to be low. Currently, there is no footpath alongside Toseland Road; therefore, the new footpath/cycleway will improve safety for both pedestrians and cyclists as they are diverted from the current route of PRow 278/3. The magnitude of impact is determined to be minor beneficial as the new footpath/cycleway will improve user safety. Overall, the Scheme is assessed to have a permanent slight beneficial effect, which is not significant, on users of the new footpath/cycleway along Toseland Road.
- 12.9.92 The Scheme will introduce a new 3m wide footpath/cycleway from Cambridge Road in Eltisley to the Caxton Gibbet junction. This new pathway will enable users from Eltisley to navigate two new roundabouts associated with the Scheme and travel along the new dual carriageway to Caxton Gibbet junction. Provision of this new footpath/cycleway may encourage active travel within the local population in turn increasing recreational and physical activity. The footpath/cycleway will provide access between Eltisley and the Caxton Gibbet junction, including the services as well as facilitating further connection into Cambourne. It is assumed that this new footpath/cycleway will be mainly used for the purpose of recreation; the sensitivity of the receptor is therefore assessed to be medium. The magnitude of impact is determined to be minor beneficial as the

new footpath/cycleway provides a new opportunity for WCH travel and increases safety for WCH users. Overall, the Scheme is assessed to have a permanent slight beneficial effect, which is not significant, upon users of this new footpath/cycleway between Eltisley and Caxton Gibbet junction.

- 12.9.93 At the Caxton Gibbet junction, several new footpaths/cycleways will enable pedestrians and cyclists to safely navigate the upgraded junction. Provision of these new footpaths/cycleways may encourage active travel within the local population in turn increasing recreational and physical activity. It is expected that the route will be used for recreational purposes as well as for access between Papworth Everard, the services at Caxton Gibbet junction and the village of Caxton. The new footpaths/cycleways may be used for commuting purposes as well as recreation, therefore the sensitivity of the receptor is assessed to be high. The magnitude of impact is determined to be minor beneficial as the new footpaths/cycleways offer new opportunities for WCH travel and increase the safety for users navigating Caxton Gibbet junction. Overall, the Scheme is assessed to have a permanent slight beneficial effect, which is not significant, upon users of the new footpaths/cycleways at the upgraded Caxton Gibbet junction.

Human health

Accessibility

- 12.9.94 During the operational phase, the new dual carriageway and associated improved road infrastructure will provide additional road capacity and improve accessibility for residents living in proximity to the Scheme when travelling to nearby health, community, recreational and educational facilities, as well as open space, green space and play space. This is particularly the case for residents within the villages of Tempsford, Roxton, Chawston and Wyboston, as residents often travel between villages and into the more urban area of St Neots to access such facilities and social infrastructure. Improved access to healthcare and social infrastructure is an essential component of creating sustainable, healthy communities. The sensitivity of the population to change is assessed to be low in line with indicators recorded in the human health baseline assessment. Therefore, by improving access to healthcare and social infrastructure, the Scheme is assessed to have a positive health outcome for residents within the health baseline study area.

Physical activity

- 12.9.95 The design for the Scheme maintains and improves existing WCH and PRoW routes within the health baseline study area during the operational phase. For example, the east to west PRoW routes running from St Neots to the open countryside to the north of Eynesbury Hardwicke will continue to exist and will be facilitated across the new dual carriageway via a footbridge and an underpass. The introduction of a new cycleway/footpath along the new Roxton Road link will improve provision for pedestrians and cyclists travelling between the villages of Roxton, Chawston and Wyboston and could encourage active travel within the local population increasing participation in physical activity.

- 12.9.96 By providing new WCH routes and improving the safety and quality of existing networks, the Scheme will encourage residents within the health baseline study area to travel more actively. This has direct benefits in terms of improved health for residents who increase their amount of exercise through sustainable local travel. The sensitivity of the population to change is assessed to be low in line with indicators recorded in the human health baseline assessment. As a result of encouraging sustainable travel through the provision of new WCH routes and improvement of existing networks, the Scheme is assessed to have a positive health outcome for residents within the health baseline study area.

Air quality

- 12.9.97 During operation, the Scheme will redirect road traffic closer to some receptors and further away from others. Seven receptors are predicted to experience increased concentrations of nitrogen dioxide, these receptors are located at Sandy and consist of a row of houses fronting the A1 between the junction with St Neots Road and Carter Street. An increase in the annual mean concentration of nitrogen dioxide has been predicted during operation due to an increase in traffic flow on the A1 both northbound and southbound. However, the magnitude of change is predicted to be imperceptible at all seven receptors. As the magnitude of change is imperceptible at all the receptors, it is considered that there is no likely significant air quality effect for human health as determined in **Chapter 5, Air quality** of the Environmental Statement [TR010044/APP/6.1]. The sensitivity of the population to change is assessed to be low in line with indicators recorded in the human health baseline assessment. Changes to air quality during the operation of the Scheme are expected to result in neutral health outcomes.

Noise and vibration

- 12.9.98 During operation, the Scheme will redistribute traffic closer to some noise receptors and further away from others. The sensitivity of the population to change is assessed to be low in line with indicators recorded in the human health baseline assessment.
- 12.9.99 During the operation of the Scheme, **Chapter 11, Noise and Vibration** of the Environmental Statement [TR010044/APP/6.1] identifies likely significant adverse noise effects at the following receptors:
- a) 1 and 2 The Barns on Little Barford Road.
 - b) 1 and 2 Wintringham Cottages, close by to Cambridge Road junction.
 - c) 3 and 4 Wintringham Cottages located to the east of Cambridge Road junction.
 - d) North Farm Cottage and Weald Farm Cottage along Cambridge Road.
 - e) North Farm on Cambridge Road.
 - f) 10 Roxton Road.
 - g) The Bungalow, Roxton Garden Centre
 - h) Rectory Farm on Little Barford Road.

- i) Five properties located in The Range located on Potton Road.
- j) Hill Farm
- k) Seven properties close by to the new Potton Road overbridge.
- l) Tithe Farm on Cambridge Road.
- m) North Farm Barn on Cambridge Road.
- n) Pastures Farm.
- o) The Dovecote at Pastures Farm.
- p) Pembroke Farmhouse.
- q) The Cow Shed (1 and 2 Pembroke Farm).
- r) New Bungalow.
- s) Oak Tree Cottage.
- t) 1-4 Common Farm Cottages.
- u) The Iway Inn.

12.9.100 Increased exposure to noise pollution can negatively impact health and wellbeing. Therefore, the operational effect of the Scheme in terms of noise and vibration as a determinant of human health will result in a negative health outcome for the people living and working in the properties identified above in section 12.9.99.

12.9.101 During the operation of the Scheme, **Chapter 11, Noise and Vibration** of the Environmental Statement [TR010044/APP/6.1]) identifies likely significant beneficial noise effects at the following receptors:

- a) Eltisley Manor on Cambridge Road.
- b) 52 properties in the vicinity of Croxton.
- c) 66 properties in Eltisley.

12.9.102 Reduced exposure to noise pollution can positively impact health and wellbeing. Therefore, the operational effect of the Scheme in terms of noise and vibration as a determinant of human health will result in a positive health outcome for the people living and working in the properties identified above in section 12.9.101.

Road safety

12.9.103 The key aims of the Scheme include improving safety at junctions, side roads and private accesses by reducing traffic flows on the existing A428; and improving safety on the A1 by removing existing substandard side road junctions and private accesses onto the carriageway. Highway improvements resulting from the Scheme will improve the safety of vehicular road users across the health baseline study area. Specifically, improvements and redesigns of the A421, Bedford Road, A1, existing Black Cat roundabout, the existing A428 and existing Caxton Gibbet roundabout are expected to reduce congestion and traffic incidents, and therefore also reduce the number of traffic accidents resulting in serious injuries and fatalities (KSI).

12.9.104 At the Black Cat junction, a new three tier junction will enable traffic to flow much more freely. Roundabout traffic will travel at grade while A1 traffic will flow under the roundabout and the A421 will flow over the junction onto the new dual carriageway. Equally, the Caxton Gibbet junction and Cambridge Road junction will connect the existing A428 to the new dual carriageway which will increase the local road network's ability to cope with unforeseen incidents. As a result of the Scheme having a beneficial impact upon road safety, the Scheme is assessed to have a positive health outcome within the health baseline study area.

Summary of significant effects

12.9.105 **Table 12-17:** summarises the significant effects for this chapter.

Table 12-17: Summary of significant effects

Description of impact	Value of receptor	Magnitude of impact	Significance of effect
Construction			
Temporary impact upon recreational users of the River Great Ouse due to closure during construction	Medium	Moderate adverse	Moderate adverse – significant
Temporary impact upon users of PRoW 73/17 due to closure during construction	Medium	Major adverse	Moderate adverse - significant

12.10 Monitoring

12.10.1 The significant adverse effect during construction Phase 2 due to the closure of PRoW 73/17 would remain temporarily during construction as no mitigation is

currently proposed. As there is no mitigation proposed, no associated monitoring will therefore be required.

- 12.10.2 The significant adverse effect during construction resulting from the construction of the River Great Ouse Viaduct would remain temporarily during construction as no mitigation is currently proposed. Works will not be carried out for more than 24 hours and the public will have prior notice, however these measures will not mitigate the significant adverse effect. No associated monitoring is deemed to be required.
- 12.10.3 In order to monitor against potential noise effects, which would result in negative health outcomes as a result of the Scheme, monitoring would be undertaken during the Scheme construction stage to ensure that the mitigation measures outlined in **Chapter 11, Noise and vibration** of the Environmental Statement [TR010044/APP/6.1] are performing as predicted. Further information on monitoring of noise effects can be found in **Chapter 11, Noise and vibration** of the Environmental Statement [TR010044/APP/6.1].
- 12.10.4 No further likely significant adverse effects have been identified to any private assets, community, development land and to human health. No associated monitoring is deemed to be required.

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