



Norwich Western Link

Environmental Statement

Chapter 17: Population and Human Health

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Contents

Glossary of Abbreviations and Defined Terms	4
17 Population and human health.....	5
17.1 Introduction.....	5
17.2 Legislative framework, policy and guidance	5
17.3 Consultation	7
17.4 Scope of the assessment	11
17.5 Method of Baseline Data Collation	15
17.6 Assumptions and Limitations.....	33
17.7 Baseline Conditions.....	35
17.8 Sensitive Receptors	69
17.9 Assessment of Potential Effects, Mitigation and Residual Effects	70
17.10 Cumulative Effects.....	112
17.11 Opportunities for Environmental Enhancement	112
17.12 Summary	113
17.13 References	126

Tables

Table 17-1 Summary of consultation undertaken	8
Table 17-2 Land-use and accessibility receptor sensitivity criteria	22
Table 17-3 – Magnitude of change criteria for land-use and accessibility elements.	28
Table 17-4 – Human health outcome category criteria.....	30
Table 17-5 – Agricultural land holding baseline information	44
Table 17-6 – PRow within the study area (Note: FP – Footpath BR – Bridleway; and RB – Restricted Byway) (Ref 17.3).....	48
Table 17-7 – Cycleways within the study area (Ref 17.4)	54
Table 17-8 – Non-designated routes used by WCH within the study area (Ref 17.14, 17.15)	55
Table 17-9 – Population by age group (2020) (Ref 17.18)	60
Table 17-10 – Life expectancy at birth for period 2018-2020 (Ref 17.19)	61
Table 17-11 – Life expectancy at birth for the period 2016-2020 – Ward Level (Ref 17.20)	61
Table 17-12 – Norfolk health indicators (Ref 17.21).....	63



Table 17-13 – Percentage of patients with COPD as recorded on practice disease registers (2022/23) (Ref 17.23)..... 65

Table 17-14 – Percentage of patients 6 years and older with asthma(2022/23) (Ref 17.24) 65

Table 17-15 – Proportion of total employees in each industry sector in Norfolk, East of England and Great Britain in 2021 66

Table 17-16 – Potential effect on agricultural land holdings during construction..... 78

Table 17-17 – Effect on users of WCH routes during construction..... 85

Table 17-18 – Construction employment generation per annum..... 96

Table 17-19 - Potential effect on agricultural land holdings during operation 101

Table 17-20 – Effect on users of WCH routes during operational phase 103

Table 17-21 – Construction Phase 114

Table 17-22 – Operational Phase 121

Appendices – separate documents

Environmental Statement Chapter 17: Population and Human Health

Appendix 1: In-combination assessment (Document Reference: 3.17.01)

Environmental Statement Chapter 17: Population and Human Health

Appendix 2: Figures (Document Reference: 3.17.02)



Glossary of Abbreviations and Defined Terms

The definition of key terms used in this chapter are provided below. These definitions have been developed by reference to the definitions used in EU and UK legislation and guidance relevant to major accidents or disasters as well as professional judgement based on knowledge and experience of similar schemes in the context of the Proposed Scheme.

Term	Definition
Community Land	Community land is land accessible and used by the public including designated common land, village greens, open green space, allotments and playing fields.
COPD	Chronic obstructive pulmonary disease
CTMP	Construction traffic management plan
DMRB	Design Manual for Roads and Bridges
GNLP	Emerging Greater Norwich Local Plan
GRT	Gypsy Roma Traveller
GVA	Gross value added
IMD	Index of multiple deprivation
LSOA	Lower-layer super output areas
NPPF	National Planning Policy Framework
OCEMP	Outline construction environmental management plan
OHID	Office for Health Improvement and Disparities
ONS	Office for National statistics
OS	Ordnance Survey
TTRO	Temporary traffic regulation orders
WCH	Walkers, cyclists and horse-riders
WCHAR	Walking, Cycling and Horse-Riding Assessment Report
WFD	Water Framework Directive



17 Population and human health

17.1 Introduction

17.1.1 This chapter reports the outcome of the assessment of likely significant effects arising from the Proposed Scheme upon Population and Human Health.

17.1.2 This chapter (and its associated figures and appendices) is intended to be read as part of the wider ES, with particular reference to **Chapter 6: Air Quality** (Document Reference: 3.06.00), **Chapter 7: Noise and Vibration** (Document Reference: 3.07.00), **Chapter 9: Landscape and Visual Effects** (Document Reference: 3.09.00), **Chapter 12: Road Drainage and the Water Environment** (Document Reference: 3.12.00) and **Chapter 19: Traffic and Transport** (Document Reference: 3.19.00).

17.2 Legislative framework, policy and guidance

Legislative framework

- The Town and Country Planning (Environmental Impact Assessment) Regulations (2017) (**Ref 17.27**) - Schedule 4, paragraph 4 of the Town and Country Planning (Environmental Impact Assessment (EIA)) Regulations 2017 requires a description of the factors likely to be significantly affected by the Proposed Scheme to be considered within the EIA. The factors that are relevant to this chapter include “population, human health”, and “land (for example land take)”. This chapter provides an assessment of the predicted impacts to these factors.
- Countryside and Rights of Way Act 2000 (**Ref 17.28**) - The CROW Act outlines the principal legislation governing the registration and protection of public footpaths, bridleways, byways open to all traffic and restricted byways.



- Equality Act 2010 (**Ref 17.29**) - The Equality Act sets out the vulnerable groups that are protected under the act which have been assumed to be present throughout the Study Area.

Policy

17.2.1 This chapter has considered the following policies:

- National Planning Policy Framework (NPPF) 2023 (**Ref 17.30**) where Section 8 states that planning decisions should aim to achieve healthy, inclusive and safe place; consider the social, economic and environmental benefits; and protect and enhance public rights of way and access;
- Broadland District Council, Development Management Development Plan Document (DPD) 2015. (**Ref 17.33**) where Policy TS1 states that land required for the improvement of the transport network will be safeguarded;
- Broadland District Council, Site Allocations DPD 2016 (**Ref 17.10**) which details land allocated for housing and employment development;
- Broadland District Council, Growth Triangle Area Action Plan (**Ref 17.35**) which details land allocated for housing and employment development for areas not covered by the Site Allocations DPD; and
- Greater Norwich Local Plan (GNLP) (**Ref 17.12**) which details land allocated for housing and employment development for the emerging local plan.
- Norfolk County Council Local Transport Plan 4 Strategy 2021 – 2036 and Implementation Plan (**Ref 17.42**). Policy 9 – Our priority for improved connectivity will be that the network is used by clean transport modes, and Policy 10 - We will seek to improve connectivity between rural areas and services in urban centres, are both relevant to this assessment.



17.2.2 Based on the above policy documents, the assessment has focused on land use, Public Right of Way (PRoW), road and travel safety, accessibility and human health.

Guidance

17.2.3 The following guidance documents have been used during the preparation of this chapter:

- Design Manual for Roads and Bridges (DMRB) LA 112 Population and human health (hereafter “DMRB LA 112”) (**Ref 17.1**);
- DMRB LA 104 Environmental assessment and monitoring (**Ref 17.36**);
- Planning Practice Guidance (**Ref 17.37**); and
- English Partnerships Additionality Guide 4th Edition (**Ref 17.39**).

17.3 Consultation

Consultation Undertaken to Date

17.3.1 **Table 17-1** provides a summary of the consultation activities undertaken in support of the preparation of this assessment.

Table 17-1 Summary of consultation undertaken

Body / organisation	Individual / stat body / organisation	Meeting dates and other forms of consultation	Summary of outcome of discussions
Gypsy Roma Traveller (GRT) Service	Community & Environmental Services, Welfare Manager	18 August 2020 (Scoping Report March 2020 Scoping Opinion)	<p>Consultee confirms that the four common land parcels within the geographical area (east of the Red Line Boundary and falling beyond the Study Area) are not used for seasonal encampments. The consultee also confirms that there are no known historical or cultural GRT site or locations that would be affected by the Proposed Scheme.</p> <p>Consultee had highlighted a section along the old A1067 Norwich to Fakenham road which has been subject to a number of unauthorised encampments. Consultee suggested consideration of design measures to discourage potential unauthorised encampments by travellers, such as target hardening (measures to make property less accessible and less of an attractive area of use).</p>
Norfolk County Council	Planning Authority	7 October 2022 (Scoping Addendum July 2022 Scoping Opinion)	<p>Consultee suggests undertaking consultations with relevant local authorities and stakeholders.</p> <p>Engagement has been undertaken with farm and landowners in the form of questionnaire. Responses from farm owners have been taken into account in the Population and human health assessment.</p>
Norfolk County Council	Public Health Department	12 August 2022 (Scoping Addendum July 2022 Scoping Opinion)	<p>Consultee suggests undertaking consultations with relevant stakeholders and members of the public.</p> <p>Stakeholder engagement has been undertaken in the form of responses to the EIA Scoping Opinion to ensure the methodology and scope of assessment have captured all receptors.</p> <p>The consultee welcomes further consultation on the detail of the health impact assessment process from the Norfolk County Council's Public Health Department. It should be noted that DMRB LA 112 has been deemed appropriate guidance to use for assessment of human health for the purpose of EIA. Hence, a standalone Health Impact Assessment (HIA) is not proposed or being undertaken for the Proposed Scheme.</p>

Body / organisation	Individual / stat body / organisation	Meeting dates and other forms of consultation	Summary of outcome of discussions
Broadland District Council	Environmental Health Officer	25 October 2022 (Email) 16 December 2022 (Email follow up)	Consultation email sent out to request confirmation on human health assessment methodology proposed and information / data relating to the population of Great Witchingham, Taverham North and Taverham South. A further email was sent to follow up the request, however, no response was received.
Landowners	Landowners	November 2022 – January 2023 (Letter)	Consultation letters issued to landowners located within the Red Line Boundary to request farming practice information and confirmation on land holding boundary.

Body / organisation	Individual / stat body / organisation	Meeting dates and other forms of consultation	Summary of outcome of discussions
Norfolk County Council	Planning Authority	December 2022 (Email)	<p>Scoping Addendum Opinion provided by NCC planning authority suggested to assess Socio-economics effect within the ES.</p> <p>This ES has therefore scoped in the assessment for direct, indirect and induced construction employment generation; and Gross Value Added (GVA) growth.</p> <p>Given the nature of the Proposed Scheme being a carriageway, the direct, indirect and induced operational employment generated is likely to be minimal (e.g. maintenance). Hence, this effect has been scoped out of the ES to maintain a proportionate assessment.</p> <p>Given there is no business park or employment allocation near the Proposed Scheme, effects on these receptors are anticipated to be minimal from the improved connection from nearby villages and settlements to the wider business park. Hence, this effect has been scoped out of the ES to maintain a proportionate assessment.</p> <p>Opportunities during the construction phase to support local supply chains development have been captured within the potential indirect construction employment generation.</p> <p>The Proposed Scheme is anticipated to generate temporary jobs for construction workers, but the level of effect is not anticipated to be significant in regard to the contribution to local skills. Hence, this effect has been scoped out of the ES to maintain a proportionate assessment.</p> <p>Given that we are out of the public health emergency, effects related to coronavirus pandemic have been scoped out of the ES to maintain a proportionate assessment.</p>



17.4 Scope of the assessment

17.4.1 The scope of this assessment has been established through a scoping process. Further information can be found in **Chapter 5: Approach to EIA** (Document Reference: 3.05.00).

Elements scoped out of the assessment

Construction phase

17.4.2 Impacts on the following elements are considered to have the potential to give rise to likely significant effects during construction of the Proposed Scheme and have therefore been considered within this assessment:

- Private property and housing;
- Community land and assets;
- Development land and businesses;
- Agricultural land holdings;
- Walkers, cyclists and horse-riders (WCH);
- Human health; and
- Employment generation (direct, indirect and induced).

Operational phase

17.4.3 Impacts on the following elements are considered to have the potential to give rise to likely significant effects during operation of the Proposed Scheme and have therefore been considered within this assessment:

- Private property and housing;
- Community land and assets;
- Development land and businesses;
- Agricultural land holdings;
- Walkers, Cyclists and Horse-riders (WCH); and



- Human health.

Extent of the study area

17.4.4 The relevant Study Areas for each element covered under the Population and Human Health assessment are as follows:

Land-use and Accessibility

17.4.5 The Study Area suggested in DMRB LA 112 Population and Human Health for land-use and accessibility receptors is 500 metres beyond the Red Line Boundary (**Ref 17.1**). The land-use and accessibility Study Areas for the Proposed Scheme are outlined below, and where the Study Area differs from the DMRB LA 112, a justification is provided:

- Private property and housing:
 - Although DMRB LA 112 (**Ref 17.1**) suggests a Study Area of 500m for private property and housing, it is not considered that any effects would be associated with the Proposed Scheme beyond the Red Line Boundary where no land take or direct access disruption are anticipated, except for those with direct means of access within the Red Line Boundary. Therefore, the Study Area comprises private properties, associated land parcels and housing allocations that lie within, or immediately adjacent to the Red Line Boundary, or those which have a direct means of access within the Red Line Boundary.
- Community land and assets:
 - Community facilities, recreational facilities (including open spaces) that lie within 500 metres of the Red Line Boundary, or those which have a direct means of access within the Red Line Boundary; and
 - Separation or severance of residents from facilities and services that they use within their community within 500 metres of the Red Line Boundary. For example, a river or motorway with no



crossing located between residential properties and facilities and services would be considered a complete separation or severance. A road with high levels of traffic and no formal crossings, but still able to be crossed by WCH at their risk, will have a degree of severance. Similarly, extensions to WCH and vehicular access routes can introduce an element of severance where this extends beyond reasonable or average travel times, depending on the mode of travel.

- Development land and businesses:
 - Although DMRB LA 112 (**Ref 17.1**) suggests a Study Area of 500m for development land and businesses, it is not considered that any effects would be associated with the Proposed Scheme beyond the Red Line Boundary where no land take or direct access disruption are anticipated. Therefore, the Study Area comprises land parcels of employment allocation, permitted development for employment and businesses that lie within, or immediately adjacent to the Red Line Boundary, or those which have a direct means of access within the Red Line Boundary.
- Agricultural land holdings:
 - Although DMRB LA 112 (**Ref 17.1**) suggests a Study Area of 500m for agricultural land holdings, it is not considered that any effects would be associated with the Proposed Scheme beyond the Red Line Boundary where no land take or direct access disruption are anticipated. Therefore, the Study Area comprises agricultural land holdings which manage or own land parcels of agricultural land that lie within the Red Line Boundary, or those which have a direct means of access within the Red Line Boundary.
- Walkers, Cyclists and Horse-riders (WCH):



- PRow and non-designated routes located within 500 metres of the Red Line Boundary.

Human Health

17.4.6 DMRB LA 112 (**Ref 17.1**) states that the Study Area for human health shall be defined based on the following:

- The extent and characteristics of a project; and
- The communities/wards directly and indirectly affected by the Proposed Scheme.

17.4.7 The guidance also notes that the Study Area will be unique to each project and should be based on the sensitivity of affected communities and the nature / extent of the project resulting in changes to health determinants.

17.4.8 In line with the guidance, the Study Area is comprised of the wards directly and indirectly affected by the Proposed Scheme due to their proximity, and therefore includes the following wards which are located within 500 metres of the Red Line Boundary:

- Great Witchingham;
- Mattishall;
- Taverham North; and
- Taverham South.

17.4.9 This assessment has been informed by data profiles of administrative areas at various levels. These areas are set out as follows;

- National: England;
- Region: East of England;
- County: Norfolk County Council;
- Local Authority / District Council: Broadland District Council and Breckland District Council;



- Ward: Great Witchingham, Mattishall, Taverham North, Taverham South and Upper Wensum; and
- Lower-layer Super Output Areas (LSOAs): Broadland 002C, Broadland 002D, Breckland 006C and Breckland 001A.

17.4.10 Other environmental effects that could give rise to human health, have been assessed in **Chapter 6: Air Quality** (Document Reference: 3.06.00), **Chapter 7: Noise and Vibration** (Document Reference: 3.07.00), **Chapter 9: Landscape and Visual Effects** (Document Reference: 3.06.00), **Chapter 12: Road Drainage and the Water Environment** (Document Reference: 3.12.00) and **Chapter 19: Traffic and Transport** (Document Reference: 3.19.00).

Socio-economics

17.4.11 The socio-economic impact of the Proposed Scheme is considered relative to the East of England as a region, as this represents the principal labour market catchment area. Norfolk is accessible from all areas of the East of England by car and by public transport and is likely to be served by labour from all boroughs across the East of England. The East of England labour market incorporates the population that may reasonably be expected to travel to and benefit from the Proposed Scheme. Therefore, the study areas for construction employment are based on the East of England (regional) and Norfolk (county level).

17.5 Method of Baseline Data Collation

Desk Study

17.5.1 The baseline conditions described for Population and Human Health have been derived from the following sources:

- Ordnance Survey (OS) Mapping;
- MAGIC Map (**Ref 17.2**);
- Norfolk Interactive map (**Ref 17.3**);
- Norwich cycle maps (**Ref 17.4**);



- Norfolk Inspire and Open Data (**Ref 17.5**);
- Agricultural and Soil Assessment including consultation with agricultural landowners via Farm Impact Questionnaire, affected holdings' websites, and Google Earth (Document reference 03.13.04);
- Walking, Cycling and Horse-Riding Assessment Report (WCHAR);
- Office for Health Improvement and Disparities (OHID) (**Ref 17.6**);
- Index of Multiple Deprivation (IMD) 2019 (**Ref 17.7**);
- Norfolk Insight (**Ref 17.8**);
- Norfolk's Joint Strategic Needs Assessment (**Ref 17.9**); and
- Office for National Statistics (ONS) NOMIS (**Ref 17.40**).

Surveys

17.5.2 Site surveys have been undertaken for the WCHAR. PRow user count presented in the WCHAR have been extracted to inform this Population and Human Health assessment.

Questionnaires

17.5.3 In total, 29 Farm / Land Impact Questionnaires were sent by both email and post by the Applicant in November 2022 to landowners and occupiers identified within the vicinity of the Proposed Scheme.

17.5.4 The covering letter explained the purpose of the data collection exercise for the EIA, and requested that landowners and occupiers completed and returned a questionnaire.

17.5.5 The questionnaire extended to five pages and included a plan of the relevant land parcels in the vicinity of the Proposed Scheme. The questionnaire asked for information on the area of land farmed, the type of farming undertaken, the area of agri-environment schemes and diversified activities, the main farm resources used and the likely impacts of the Proposed Scheme on the land holding.



17.5.6 Seven questionnaires were returned, and there were no requests from landowners or occupiers that the data be collected in another manner. There was an ongoing dialogue between the Applicant's consultants and some landowners and their agents, and attempts to chase responses were made at the end of November and mid-December 2022.

Assessment Methodology

17.5.7 The approach and methodologies used for the Population and Human Health elements of the assessment are in accordance with the latest DMRB LA 112 guidance and English Partnerships Additionality Guide 4th Edition. The relevant parts of this guidance are outlined below.

Land-use and Accessibility

Private Property and Housing

17.5.8 A qualitative desk-based assessment has been carried out. Data used to inform the assessment has comprised the following:

- The location and number of private properties potentially affected by demolition would be required, or from which land would be required, or access would be affected by the Proposed Scheme; and
- The location of residential development land and number of units that would be affected by the Proposed Scheme.

Community Land and Assets

17.5.9 A qualitative desk-based assessment has been undertaken. Data collected comprised the following:

- Identification of community land whose access would be potentially affected by the Proposed Scheme.
- Community land and assets including such facilities as common land, village greens, open space, allotments, sports pitches, village halls, healthcare facilities, education facilities and religion facilities; and



- The level of existing accessibility restrictions or severance to community land and assets within the Study Area.

17.5.10 The key community and recreational facilities have been identified through a combination of aerial imagery, OS and internet mapping and information from local authority websites.

Development Land and Businesses

17.5.11 A qualitative desk-based assessment has been undertaken and data collected comprised the following:

- The location and number of businesses from which land would potentially be required, or which would potentially have property, operations or access affected by the Proposed Scheme;
- The location of land allocated for development by local authorities that would be potentially affected by the Proposed Scheme;
- Land which is subject to planning application(s) supporting future jobs; and
- The level of existing accessibility restrictions or severance to development land and businesses within the Study Area.

Agricultural Land Holdings

17.5.12 A qualitative desk-based assessment has been undertaken and data collected comprised the following:

- The type, location and number of agricultural holdings from which land would potentially be required or access affected by the Proposed Scheme;
- The level of existing severance or accessibility restrictions to agricultural land holdings within the Study Area; and
- The frequency of use of the agricultural holdings or assets within the Study Area.



Walkers, Cyclists and Horse-riders (WCH)

17.5.13 A qualitative desk-based assessment has been undertaken and data collected comprised the following:

- The type, location and extent of WCH provision, including PRow, within the Study Area; and
- The frequency of use of the WCH provision within the Study Area.

Human Health

17.5.14 A qualitative, desk-based assessment of human health has been carried out using guidance in accordance with DMRB LA 112 (**Ref 17.1**) (see **Paragraphs 17.7.38 to 17.7.59**). The assessment has been informed by other topic assessments including **Chapter 6: Air Quality** (Document Reference: 3.06.00), **Chapter 7: Noise and Vibration** (Document Reference: 3.07.00), **Chapter 9: Landscape and Visual Effects** (Document Reference: 3.09.00), **Chapter 12: Road Drainage and the Water Environment** (Document Reference: 3.12.00) and **Chapter 19: Traffic and Transport** (Document Reference: 3.19.00), and assessments of receptors within this chapter (WCH, private land and housing, and community land and assets).

Socio-economics

17.5.15 The approach and methodologies used for the socio-economic assessment are outlined below.

Construction Employment Generation

17.5.16 The gross employment generated by the temporary construction phase can be estimated by applying an average gross output per construction industry employee from 2019 (**Ref 17.41**) to the estimated total construction cost. Leakage, displacement, and multiplier effects are then taken into account to determine the total net employment. It is acknowledged that more recent output per construction employee data has been released. However, the most recent data covers the years affected by COVID-19 which provides a lower output per construction employee, which when applied to the calculation leads



to an artificially inflated number of employees. Therefore, in order to present a worst-case scenario (based on professional judgement, this is considered to be more representative of the current baseline situation), the data available prior to COVID-19 (2019) has been used for the calculation.

Leakage

17.5.17 Leakage effects are the “*proportion of outputs that benefit those outside of the intervention’s target area or group*” (Ref 17.39). A medium leakage rate has been applied and implies that the majority of employment opportunities would go to people living within the target (effect) area.

Displacement

17.5.18 Displacement measures the extent to which the benefits of a project are offset by reduction of output or employment elsewhere. Additional demand for labour as a result of the construction phase of the Proposed Scheme cannot simply be treated as a net benefit as it has the potential to remove workers from other positions, and the net benefit is therefore reduced by the extent that this occurs.

17.5.19 While construction workers typically move between construction projects when delays occur or to help the workforce meet particular construction deadlines, the workforce within the East of England is likely to have a moderate level of flexibility as construction workers are assumed to be able to access some alternative projects should delays arise. The English Partnerships Additionality Guidance provides guidance on the levels of displacement. Given the geographical context of the Proposed Scheme, workers are assumed to have some access to other construction projects in the East of England should delays arise, and therefore a medium level of displacement of 50% is considered appropriate.

Multiplier effects

17.5.20 In addition to the direct employment generated by the Proposed Scheme itself, there would be an increase in local employment arising from “*further economic activity (jobs, expenditure or income) associated with additional local*



income and local supplier purchases” (**Ref 17.39**) and the indirect and induced effects of the construction activity. Employment growth would arise locally through manufacturing services and suppliers to the construction process (indirect or supply linkage multipliers). Additionally, part of the income of the construction workers and suppliers would be spent in the East of England, generating further employment (induced or income multipliers).

17.5.21 The effects of the multiplier depend on the size of the geographical area that is being considered, the local supply linkages and income leakage from the area. The English Partnerships Additionality Guidance provides a guide to the composite multipliers (the combined effect of indirect and induced multiplier effects) which should be applied. In line with this guidance, within the East of England context a ‘high’ multiplier of 1.7 is considered appropriate.

Gross Value Added

17.5.22 GVA is the measure of the value of goods and services produced in an area, industry or sector of an economy. It equates to the value of output minus the value of intermediate consumption. GVA per construction worker will be estimated using accepted guidance from the Office for National Statistics (**Ref 17.40**).

Sensitivity of Receptors

17.5.23 This section outlines the criteria used to determine the sensitivity of receptors.

Land-use and Accessibility

17.5.24 The sensitivity of land use and accessibility receptors has been evaluated with reference to the criteria in Table 3.11 of DMRB LA 112 (**Ref 17.1**) and this criteria is set out in **Table 17-2**.



Table 17-2 Land-use and accessibility receptor sensitivity criteria

Sensitivity	Receptor	Criteria
Very high	Private Property and Housing	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); and/or Existing housing and land allocated for housing (e.g., strategic housing sites) covering >5ha and / or >150 houses.
Very high	Community Land and Assets	Complete severance between communities and their land/assets, with little/no accessibility provision; Alternatives are only available outside the local planning authority area; The level of use is very frequent (daily); and The land and assets are used by the majority (>=50%) of the community.
Very high	Development Land and Businesses	Existing employment sites (excluding agriculture) and land allocated for employment (e.g. strategic employment sites) covering >5ha.
Very high	Agricultural land holding	Areas of land on 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).



Sensitivity	Receptor	Criteria
Very high	WCH	<p>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.</p> <p>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.</p> <p>Rights of way for WCH crossing roads at grade with >16,000 vehicles per day.</p>
High	Private Property and Housing	<p>Private property or land allocated for housing located in a local planning authority area where the number of households are expected to increase by 16-25% by 2041 (ONS data); and/or</p> <p>Existing housing and land allocated for housing (e.g. strategic housing sites) covering >1-5ha and / or >30-150 houses.</p>
High	Community Land and Assets	<p>There is substantial severance between community and assets, with limited accessibility provision;</p> <p>Alternative facilities are only available in the wider local planning authority area;</p> <p>The level of use is frequent (weekly); and</p> <p>The land and assets are used by the majority (>=50%) of the community.</p>



Sensitivity	Receptor	Criteria
High	Development Land and Businesses	Existing employment sites (excluding agriculture) and land allocated for employment (e.g. strategic employment sites) covering >1 - 5ha.
High	Agricultural land holding	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).
High	WCH	Regional trails and routes (e.g. promoted circular walks) likely to be used for recreation and to a lesser extent commuting, which record frequent (daily) use. Limited potential for substitution; and/or Rights of way for WCH crossing roads at grade with >8,000 - 16,000 vehicles per day.
Medium	Private Property and Housing	Houses or land allocated for housing located in a local authority area where the number of households are expected to increase by >6-15% by 2041 (ONS data); and/or Existing housing and land allocated for housing (e.g. strategic housing sites) covering <1ha and / or <30 houses.



Sensitivity	Receptor	Criteria
Medium	Community Land and Assets	<p>There is severance between communities and their land/assets but with existing accessibility provision;</p> <p>Limited alternative facilities are available at a local level within adjacent communities;</p> <p>The level of use is reasonably frequent (monthly); and</p> <p>The land and assets are used by the majority (>=50%) of the community.</p>
Medium	Development Land and Businesses	<p>Existing employment sites (excluding agriculture) and land allocated for employment (e.g. strategic employment sites) covering <1ha.</p>
Medium	Agricultural land holding	<p>Areas of land in which the enterprise is partially dependent on the spatial relationship of land to key agricultural infrastructure; and</p> <p>Access between land and key agricultural infrastructure is required on a reasonably frequent basis (monthly).</p>
Medium	WCH	<p>Public rights of way and other routes close to communities which are used for recreational purposes (e.g. dog walking), but for which alternative routes can be taken. These routes are likely to link to a wider network of routes to provide options for longer, recreational journeys, and / or</p> <p>Rights of way for WCH crossing roads at grade with >4,000 – 8,000 vehicles per day.</p>



Sensitivity	Receptor	Criteria
Low	Private Property and Housing	Proposed development on unallocated sites providing housing with planning permission/ in the planning process.
Low	Community Land and Assets	Limited existing severance between community and assets, with existing full Disability Discrimination Act compliant accessibility provision (please note that the Disability Discrimination Act has been repealed and replaced by the Equality Act 2010 for England); Alternative facilities are available at a local level within the wider community; The level of use is infrequent (monthly or less frequent); and The land and assets are used by the minority (>=50%) of the community.
Low	Development Land and Businesses	Proposed development on unallocated sites providing employment with planning permission/in the planning process.
Low	Agricultural land holding	Areas of land which the enterprise is not dependent on the spatial relationship of land to key agricultural infrastructure; and Access between land and key agricultural infrastructure is required on an infrequent basis (monthly or less frequent).



Sensitivity	Receptor	Criteria
Low	WCH	Routes which have fallen into disuse through past severance or which are scarcely used because they do not currently offer a meaningful route for either utility or recreational purposes, and/or Rights of way for WCH crossing roads at grade with <4000 vehicles per day.
Negligible	Private Property and Housings	Not Applicable.
Negligible	Community Land and Assets	No or limited severance or accessibility issues; Alternative facilities are available within the same community; The level of use is very infrequent (a few occasions yearly); and The land and assets are used by the minority (>=50%) of the community.
Negligible	Development Land and Businesses	Not Applicable.
Negligible	Agricultural Land	Areas of land which are infrequently used on a non-commercial basis.
Negligible	WCH	Not Applicable.

Human Health

17.5.25 Human health receptors have been assigned a sensitivity using professional judgement, based on the health profile of the Study Area identified in **paragraphs 17.3.10 and 17.3.11**. A health receptor's sensitivity is based on their ability to experience a potential impact without incurring a substantial change to their health status.

17.5.26 The sensitivity of a community or population has been reported as:



- Low;
- Medium; or
- High.

Socio-economics

17.5.27 Specific values in terms of sensitivity have not been attributed to Socio-economic resources / receptors due to their diversity in nature and scale.

Magnitude of Change

Land-use and Accessibility

17.5.28 The magnitude of change for land-use and accessibility elements has been assessed in accordance with criteria detailed DMRB LA 112's (Ref 17.1) Table 3.12: Magnitude of change and typical descriptions, in combination with professional judgement. The table of criteria for determining magnitude of change has been replicated in Table 17-3 below.

Table 17-3 – Magnitude of change criteria for land-use and accessibility elements

Magnitude of change	Receptor	Typical Criteria Descriptors
Major	<ul style="list-style-type: none"> ■ Private property and housing; ■ Community land and assets; ■ Development land and businesses; and ■ Agricultural land holdings. 	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements, e.g., direct acquisition and demolition of buildings and direct development of land to accommodate highway assets; and/or Introduction (adverse) or removal (beneficial) of complete severance with no/full accessibility provision.
Major	WCH	>500m increase (adverse) / decrease (beneficial) in WCH journey length.



Magnitude of change	Receptor	Typical Criteria Descriptors
Moderate	<ul style="list-style-type: none"> ■ Private property and housing; ■ Community land and assets; ■ Development land and businesses; and ■ Agricultural land holdings. 	<p>Partial loss of/damage to key characteristics, features or elements, e.g., partial removal or substantial amendment to access or acquisition of land compromising viability of property, businesses, community assets or agricultural holdings; and/or</p> <p>Introduction (adverse) or removal (beneficial) of severe severance with limited / moderate accessibility provision.</p>
Moderate	WCH	>250m - 500m increase (adverse) or decrease (beneficial) in WCH journey length.
Minor	<ul style="list-style-type: none"> ■ Private property and housing; ■ Community land and assets; ■ Development land and businesses; and ■ Agricultural land holdings. 	<p>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, community assets or agricultural holdings; and/or</p> <p>Introduction (adverse) or removal (beneficial) of severance with adequate accessibility provision.</p>
Minor	WCH	>50m - 250m increase (adverse) or decrease (beneficial) in WCH journey length.



Magnitude of change	Receptor	Typical Criteria Descriptors
Negligible	<ul style="list-style-type: none"> ■ Private property and housing; ■ Community land and assets; ■ Development land and businesses; and ■ Agricultural land holdings. 	Very minor loss or detrimental alteration to one or more characteristics, features or elements, e.g., acquisition of non-operational land or buildings not directly affecting the viability of property, businesses, community assets or agricultural holdings; and/or very minor introduction (adverse) or removal (beneficial) of severance with ample accessibility provision.
Negligible	WCH	<50m increase (adverse) or decrease (beneficial) in WCH journey length
No change	All	No loss or alteration of characteristics, features, elements or accessibility; no observable impact in either direction.

Human Health

17.5.29 A qualitative assessment of human health has been undertaken following guidance set out within the latest DMRB LA 112 (**Ref 17.1**). Community or population sensitivity has been determined and likely changes to health determinants as a result of the Proposed Scheme have been established (see **paragraph 17.8.1**). The likely health outcome(s) have then been identified in line with the categories in **Table 17-4**, using evidence to support conclusions.

Table 17-4 – Human health outcome category criteria

Human Health Outcome Category	Human Health Outcome Description
Positive	A beneficial health impact is identified.
Neutral	No discernible health impact is identified.
Negative	An adverse health impact is identified.



Human Health Outcome Category	Human Health Outcome Description
Uncertain	Where uncertainty exists as to the overall health impact.

Socio-economics

17.5.30 A quantitative assessment process for construction employment generation has been undertaken. The quantified effects for construction employment generation have been assessed based on the following definitions:

- **Beneficial:** classifications of significance indicate an advantageous or beneficial impact on an area, which may be minor, moderate, or major;
- **Negligible:** classifications of significance indicate imperceptible impacts on an area; and
- **Adverse:** classifications of significance indicate a disadvantageous or adverse impact on an area, which may be minor, moderate or major.

Significance Criteria

Land-use and Accessibility

17.5.31 The significance level attributed to each effect has been assessed based on the sensitivity/value of the affected receptor(s) and the magnitude of change arising from the Proposed Scheme, as well as a number of other factors that are outlined in more detail in **Chapter 5: Approach to EIA** (Document Reference: 3.05.00), **Table 5-4 – Matrix for Classifying Effects**.

Human Health

17.5.32 In accordance with DMRB LA 112 (**Ref.17.1**), the human health assessment does not quantify the severity or extent of effects to the potential changes to health outcomes resulting from the Proposed Scheme. Instead, health impacts are split into broad categories to report how health outcomes within the Study Area will be affected, as set out in **Table 17-4** above, based upon the qualitative impacts identified. Significance of effects on human receptors has been determined in related topic chapters including: **Chapter 6: Air**



Quality (Document Reference: 3.06.00), **Chapter 7: Noise and Vibration** (Document Reference: 3.07.00), **Chapter 9: Landscape and Visual Effects** (Document Reference: 3.09.00), **Chapter 12: Road Drainage and the Water Environment** (Document Reference: 3.12.00) and **Chapter 19: Traffic and Transport** (Document Reference: 3.19.00).

Socio-economics

17.5.33 There is currently no guidance on assessing the significance of effect for socio-economics. Significance of effect has been assigned using **Chapter 5: Approach to EIA** (Document Reference: 3.05.00), **Table 5-4 – Matrix for Classifying Effects** based on professional judgement.

Effect Significance

17.5.34 The following terms have been used to define the significance of the land use and accessibility, and socio-economics effects identified and apply to both beneficial and adverse effects:

- **Very Large effect:** where the Proposed Scheme could be expected to have a substantial improvement or deterioration on receptors;
- **Large effect:** where the Proposed Scheme could be expected to have a considerable improvement or deterioration on receptors;
- **Moderate effect:** where the Proposed Scheme could be expected to have a noticeable improvement or deterioration on receptors;
- **Slight effect:** where the Proposed Scheme could be expected to result in a perceptible improvement or deterioration on receptors; and
- **Neutral:** where no discernible improvement or deterioration is expected as a result of the Proposed Scheme on receptors, including instances where no change is confirmed.

17.5.35 In terms of duration of an effect, a short-term effect is considered to be one year (or below) in duration; a medium-term effect is considered to be between one to five years in duration; and a long-term effect is considered to be



greater than five years in duration. A temporary effect is one which is considered to have a duration of five years or below, whilst a permanent effect is considered to be greater than five years in duration.

17.5.36 As set out in **Chapter 5: Approach to EIA** (Document Reference: 3.05.00), effects that are classified as **moderate or above** are considered to be **significant**. Effects classified as slight or below are considered to be **not significant**.

17.6 Assumptions and Limitations

17.6.1 The following limitations and assumptions have been identified for Population and human health assessment:

- The assessment relies on, in part, data provided by third parties (e.g. OS Mapping, Local Authorities, ONS) which are the most up-to-date, available at the time of the assessment. No significant changes or limitations in these datasets have been identified that would affect the robustness of the assessment for EIA purposes.
- The sensitivities of residential properties, business premises and allocated housing and employment sites have been assessed using approximate areas based on publicly available data where possible.
- There is no data publicly available on frequency of use for community land and assets. The sensitivities of community land and assets have been assessed based on professional judgement, using publicly available information and according to the location and type of the facilities.
- Every reasonable effort has been made to discuss the potential effects of the Proposed Scheme on the agricultural land holdings, including sending a farm impact assessment questionnaire to all affected parties, and contacting the landowners and their agents to set up telephone calls or face-to-face meetings. However, not all landowners or their agents have chosen to engage with this process. There was a limited



response to the Farm Impact Questionnaire, such that most of the assessments have been carried out on the basis of available information from land referencing, from the affected holdings' websites and other internet searches, and from current and historic Google Earth imagery.

- The Agricultural Land Holding assessment assumes that land for environmental mitigation would be required permanently where the land is no longer able to be used for any agricultural purposes. It should be noted that where land has been reported as permanently removed from agricultural use for the purposes of environmental mitigation, some of these areas will still be able to support agricultural use. Areas to be used for grassland creation and Water Framework Directive (WFD) mitigation would be able to be used for some grazing, as long as it is not intensive, and does not prohibit its functions for biodiversity and WFD mitigation. However, for the purposes of this assessment, a worst-case scenario has been presented.
- The number of users of some WCH routes has been informed by the WCHAR assessment, which has a different Study Area to this assessment, and therefore user counts are not available for all PRoW and other routes within the Study Area. Assumptions have been made using professional judgement on the likely levels of use where data has not available.
- The assessment identifies population impacts down to the lowest defined population group available according to ONS survey outputs (lower super output areas), further granularity of data has not been available. No significant changes or limitations in these datasets have been identified that would affect the robustness of the assessment for EIA purposes.
- No site survey has been undertaken for the purpose of this chapter. However, this is not considered to affect the robustness of the



assessment for EIA purposes due to baseline information being publicly available online. The assessment makes reference to the WCHAR assessment and **Appendix 13.4 Agricultural Land Classification and Soil Resources (ALC)** (Document Reference: 3.13.04).

- Given that DMRB standard does not provide guidance in assessing new WCH routes, professional judgement has been applied when assessing significance of effect of new WCH route provisions.
- The assessment of construction employment was based on the assumption that construction employment is likely to be served by labour from all boroughs across East of England.
- Where a range of level of effect is applicable in Table 3.8.1 of DMRB LA 104, professional judgement has been applied to determine the significance of effect.

17.7 Baseline Conditions

17.7.1 This section provides an overview of the baseline conditions for the Proposed Scheme. The location of the receptors listed below (and which fall within the 500 metre study area) are shown on **Figure 17.1: Population and Human Health Receptors** in **Appendix 17.2** (Document Reference: 3.17.02).

Land-use and Accessibility

Private Property and Housing

17.7.2 Under the assessment of private property and housing, existing private property and land allocated for future housing development is considered. Private property is land that does not accommodate public space or any other community facility or asset, which includes residential property. Allocated land is defined as those areas of land designated within the Site Allocations Development Plan Document (DPD) (**Ref 17.10**), Joint Core Strategy (**Ref 17.11**) or Emerging Greater Norwich Local Plan (GNLP) (**Ref 17.34**) for



residential development purposes and/or land where planning permission for residential development has been granted or is pending.

17.7.3 There are two existing residential properties (as shown on **Figure 17.1** ((Document Reference: 3.05.00) as PP1 and PP4) located within the Red Line Boundary. They are located on the A1067 Fakenham Road and off The Street, and are residential properties of less than 1 hectare (ha) in size and therefore of medium sensitivity. PP1 is located directly south of the north-western extent of the Red Line Boundary. Its direct access is located directly south of the Site Boundary (A1067 Upgrade). PP4 is located south of footpath Ringland FP2 and is accessed from The Street.

17.7.4 There is one residential property (as shown on **Figure 17.1** (Document Reference: 3.05.00 as PP10) which is partly located within the redline boundary (associated land lies within the redline boundary and is considered under Agricultural Land Holding 32). The residential property is outside and directly north of the Red Line Boundary, and accessed from Weston Green Road. The residential property is less than 1 hectare (ha) in size and therefore of medium sensitivity.

17.7.5 There are a number of residential properties which, while they are situated outside the Red Line Boundary their direct access lies within the Red Line Boundary. These include:

- One residential property (as shown on **Figure 17.1** (Document Reference: 3.05.00) as PP2) located off the A1270 Broadland Northway – residential property of less than 1ha in size and therefore of medium sensitivity (located north of the north-eastern extent of the Red Line Boundary) (direct access located within the Red Line Boundary and approximately 25 metres north-east of the Proposed Scheme (A1067 Upgrade));
- One residential property (as shown on **Figure 17.1** (Document Reference: 3.05.00) as PP3) located off the A1067 Fakenham Road – residential property of less than 1ha and therefore of medium



sensitivity (located directly south of the north-western extent of the Red Line Boundary) (direct access located within the Red Line Boundary and approximately 40 metres north-west of the Proposed Scheme (A1067 Upgrade));

- Three residential properties (as shown on **Figure 17.1** (Document Reference: 3.05.00) as PP5 – shown together as a group) located off Ringland Lane – residential properties each less than 1ha and therefore of medium sensitivity (approximately 390 metres south of the western section of the Red Line Boundary) (direct access located within the Red Line Boundary and approximately 280 metres west of the Proposed Scheme (Ringland Lane Underbridge));
- One residential property (as shown on **Figure 17.1** (Document Reference: 3.05.00) as PP6) located on Weston Road – residential property of less than 1ha and therefore of medium sensitivity (located directly south of the eastern extent of the Red Line Boundary) (direct access located within the Red Line Boundary and approximately 440 metres south-east of the Proposed Scheme (Morton Green Bridge));
- One residential property (as shown on **Figure 17.1** (Document Reference: 3.05.00) as PP7) located off the A1067 Fakenham Road – residential property of less than 1ha and therefore of medium sensitivity (located at the northern most extent of the Red Line Boundary) (direct access located within the Red Line Boundary and approximately 1 kilometre north-west of the Proposed Scheme (A1067 Upgrade)); and
- Four private properties (as shown on **Figure 17.1** (Document Reference: 3.05.00) as PP8 and PP9 – shown as a group) located between Fakenham Road and Ringland Lane - residential properties of less than 1ha and therefore of medium sensitivity (located at the northern extent of the Red Line Boundary) (direct access located within



the Red Line Boundary and approximately 620 metres north-east of the Proposed Scheme (Ringland Lane Underbridge)).

Allocated Housing

17.7.6 There are no housing land allocations located within, directly adjacent to or proposed to be accessed from the Red Line Boundary.

Community Land and Assets

Communities and Community Facilities

17.7.7 This section provides a summary of the community facilities available to residents within settlements located wholly, or partly within 500 metres of the Red Line Boundary. None of the identified community facilities are located within the Red Line Boundary.

Weston Longville

17.7.8 Weston Longville is a village located adjacent to the westernmost extent of the Red Line Boundary. The identified community facilities in Weston Longville within the Study Area are as follows:

- One community centre; and
- Two places of worship.

17.7.9 Access to further community facilities and journeys to other employment premises in Norwich are likely to be via the A1067 Fakenham Road. The Proposed Scheme would be located between Weston Longville and Norwich.

17.7.10 There is existing severance between the community and the identified community assets from Honingham Road and Morton Lane. The frequency of use of the identified facilities are likely to be weekly (there is a weekly service at All Saints Church and the village hall is used daily for classes and is available for rental). Although alternative facilities are available within adjacent communities, the village hall is being used daily. Hence, community facilities within Weston Longville are categorised as being of very high sensitivity.



Weston Green

17.7.11 Weston Green is a hamlet located approximately 270 metres west of the mid-section of the Red Line Boundary. There are no community facilities identified within the Study Area and therefore the community is deemed to be of negligible sensitivity. Therefore, residents are likely to access community facilities and employment premises in Norwich most likely via the A1067 Fakenham Road and A47. The Proposed Scheme would be located between Weston Green and Norwich.

Honingham

17.7.12 Honingham is a small town located approximately 100 metres south of the southernmost extent of the Red Line Boundary. The identified community facilities in Honingham within the Study Area are as follows:

- One village hall; and
- One place of worship.

17.7.13 Access to further community facilities and journeys to other employment premises in Norwich are likely to be via the A47. The Proposed Scheme would be located north of Honingham and west of Norwich.

17.7.14 The frequency of use of the identified facilities are not publicly available. A weekly use of community facilities has been assumed as a worse-case scenario. Alternative facilities are available within adjacent communities. Given there is limited existing severance between the community and the identified community assets from Dereham Road and The Street, community facilities within Honingham are of low sensitivity.

Ringland

17.7.15 Ringland is a village located approximately 200 metres south-east of the southernmost extent of the Red Line Boundary. The identified community facilities in Ringland within the Study Area are as follows:

- One village hall; and



- One place of worship.

17.7.16 Access to further community facilities and journeys to other employment premises in Norwich are likely to be via the A1067. The Proposed Scheme would be located west of Ringland and Norwich.

17.7.17 The frequency of use of the identified facilities are not publicly available. Weekly use of community facilities has been assumed as a worse-case scenario. Alternative facilities are available within adjacent communities. Given there is limited existing severance between the community and the identified community assets along The Street, community facilities within Ringland have been categorised as being of low sensitivity.

Attlebridge

17.7.18 Attlebridge is a village located approximately 300 metres north of the northernmost extent of the Red Line Boundary. The identified community facilities in Attlebridge within the Study Area are as follows:

- One place of worship; and
- One nursery.

17.7.19 Access to further community facilities and journeys to other employment premises in Norwich are likely to be via the A1067. The Proposed Scheme would be located south of Attlebridge and west of Norwich.

17.7.20 The frequency of use of the identified facilities is not publicly available. A range of daily to weekly uses of community facilities has been assumed as a worse-case scenario. Alternative facilities are available within adjacent communities. Although there is limited existing severance between the community and the identified community assets along Old Fakenham Road, the nursery is being used from Monday to Friday. Hence, community facilities within Attlebridge are categorised as being of high sensitivity.



Community Land

17.7.21 Community land is land accessible and used by the public including designated common land, village greens, open green space, allotments and playing fields.

17.7.22 There is no community land located or with access of means within the Red Line Boundary. There is one open space (**Ref 17.13**) located within the 500 metre Study Area, outside of the Red Line Boundary, which is Marl Hill Road Open Space. It is located approximately 100 metres west of the north-westernmost extent of the Red Line Boundary with access from Church Street. There is limited alternative facilities available at a local level within adjacent communities. Level of use of the Open Space is assumed to be weekly and therefore of high sensitivity.

17.7.23 There is no registered common land, village greens, allotments or playing fields located within the 500 metre Study Area.

Recreational Sites

17.7.24 Recreational sites are facilities accessible by the public and used for recreational purposes including playgrounds, sports clubs and facilities, golf courses and parks.

17.7.25 There are four recreational sites (**Ref 17.13**) identified within the 500 metre Study Area, outside of the Red Line Boundary. These include:

- Wensum Valley Golf Club, Beech Avenue – alternative facilities are available at a local level within adjacent communities, frequency of use is likely to be daily. However, it is not likely to be used by the majority of the community, therefore the golf club is deemed to be of medium sensitivity due to the consideration of local alternative facilities and frequency of use (located directly south of the northernmost extent of the Red Line Boundary) (accessed via Beech Avenue);
- Mid Norfolk Shooting Ground (a mix of outdoor air gun range, archery range and clay shooting range) – alternative facilities are only available



in the wider local planning authority area, frequency of use is likely to be daily. However, it is not likely to be used by the majority of the community, therefore the shooting ground is deemed to be of high sensitivity (located approximately 190 metres north of the northernmost extent of the Red Line Boundary) (accessed via the A1067 Fakenham Road);

- Weston Park Golf Club, Morton Lane – alternative facilities are available at a local level within adjacent communities, frequency of use is likely to be daily. However, it is a member’s facility and not likely to be used by the majority of the community, therefore the golf club is deemed to be of medium sensitivity due to the consideration of local alternative facilities and frequency of use (located approximately 380 metres north-west of the north-westernmost extent of the Red Line Boundary) (accessed via the A1067 Fakenham Road or Morton Lane); and
- Khora Yoga, a temporarily closed (but included for the worst-case scenario where the facility reopens) yoga studio within a private residence – there is existing severance from the surrounding road network for residence in the community to access the facility. Alternative facilities are available at a local level within adjacent communities, frequency of use is likely to be weekly. However, it is not likely to be used by the majority of the community, therefore deemed to be of medium sensitivity (located approximately 210 metres north-west of the mid-section of the Red Line Boundary) (accessed via Ringland Lane).

17.7.26 For each identified open space and recreational site, there is more than one access route, and a good level of existing accessibility to recreational facilities. The only exception to this is the Khora Yoga where there is only one access from Ringland Lane to the recreational site and no PRoW links to the recreational site.



Development Land and Businesses

17.7.27 Development land as defined within DMRB LA 112 (**Ref 17.1**) is employment land allocated within the Site Allocations Development Plan Document (DPD) (**Ref 17.10**), Joint Core Strategy (**Ref 17.11**) and Emerging GNLP (**Ref. 17.34**) for development purposes. There are no employment land allocations or existing businesses (except agricultural land holdings) located within the Red Line Boundary. Agricultural land holdings are considered separately in the section below.

17.7.28 There are two business premises whose access lies within the Red Line Boundary. These are:

- Direct access to Mid Norfolk Shooting Ground lies within the Red Line Boundary. It covers land of over 5ha and so this receptor is deemed to be of very high sensitivity (located approximately 190m north of the northernmost extent of the Red Line Boundary) (accessed via the A1067 Fakenham Road); and
- Direct access to Khora Yoga lies within the Red Line Boundary. It is temporarily closed (and included as a worst case scenario should it re-open). It covers land of less than 1ha and so this receptor is deemed to be of medium sensitivity (located approximately 210 metres north-west of the mid-section of the Red Line Boundary) (accessed via Ringland Lane).

17.7.29 There is only one way of accessing the business premises identified above, and no alternative route.

Agricultural Land Holdings

17.7.30 The land referencing has identified 18 separate land holdings within the Red Line Boundary.

17.7.31 Three of these land parcels (nos. 4, 5 and 15) do not include agricultural land or woodland, and comprise land surrounding an industrial unit, some



balancing ponds within highways land and part of a residential property.

These are not therefore included within the assessment.

17.7.32 Five of the land parcels (nos. 10, 12, 17, 18 and 19) are solely woodland, although 10 is woodland that is managed separately from the agricultural land (no. 9) within the same estate.

17.7.33 Ten land parcels comprise agricultural land, of which three (land parcel 44 and two environmental mitigation areas) are in combination with woodland (see **Figure 17.3** in **Appendix 17.2** (Document Reference: 3.17.02)). Of the ten land parcels comprising agricultural land, these are predominantly arable holdings, either growing mostly combinable crops (cereals and oilseeds) or also root crops (general cropping farms). There is permanent pasture within the floodplain of the River Wensum and a grassland (equestrian) holding along Weston Road.

Table 17-5 – Agricultural land holding baseline information

Agricultural and woodland land holding (parcel number)	Area and type of use (all areas have been rounded to the nearest hectare)	Agricultural Land Holding sensitivity
1	19ha arable land	Medium sensitivity
7	36ha permanent pasture and arable land	Medium sensitivity
9 and 10 (Moreton Hall Estate)	9 - 300ha general cropping (cereals, carrots, maize) and livestock (outdoor pigs) 10 - 46ha woodland	9 - High sensitivity 10 - Low sensitivity
12	1ha woodland	Low sensitivity



Agricultural and woodland land holding (parcel number)	Area and type of use (all areas have been rounded to the nearest hectare)	Agricultural Land Holding sensitivity
14 (Honingham Thorpe Farms)	400ha arable land, grassland and livestock (outdoor pigs)	High sensitivity
17 (Suffolk Life Trustee Co Ltd.)	1ha woodland	Low sensitivity
18	1ha woodland (for private not commercial use)	Low sensitivity
19	1ha woodland (for private not commercial use)	Low sensitivity
32	5ha grassland, equestrian use	High sensitivity
44 (Easton Estate)	1000ha arable land and woodland	Medium sensitivity
45	115ha arable land	Medium sensitivity
Environmental mitigation area	122ha arable land with 2ha in Countryside Stewardship Scheme	Medium sensitivity
Marl Hill Road/Morton Lane	73ha farmed General cropping with some woodland; all arable land in the Sustainable Farming Initiative pilot scheme	Medium sensitivity



Agricultural and woodland land holding (parcel number)	Area and type of use (all areas have been rounded to the nearest hectare)	Agricultural Land Holding sensitivity
Environmental mitigation area	350ha farmed General cropping with some woodland; all arable land in the Sustainable Farming Initiative pilot scheme	Medium Sensitivity

Walkers, Cyclists and Horse-riders (WCH)

17.7.34 WCH routes include designated public footpaths, public bridleways, restricted byways, cycle paths, recreational routes and footways along the pavement.

17.7.35 A WCHAR has been completed for the Proposed Scheme which provides a general overview of how the local road and PRoW networks are being used by pedestrians (including dog walkers), cyclists and equestrians. The report details the user counts for a number of the local roads and Marriott’s Way circular (leisure route) identified within this chapter. The data was collected by the WCHAR surveyor over an 18-hour period on each of the following four days: 17 October (Thursday), 18 October (Friday), 19 October (Saturday) and 20 October (Sunday) 2019; or 31 October (Thursday), 1 November (Friday), 2 November (Saturday) and 3 November (Sunday) 2019. Findings from the WCHAR are not expected to have changed significantly since this survey was conducted that would affect the robustness of the assessment for EIA purposes. This is because there are no major changes in resident population or house numbers in the area between when the WCHAR was undertaken and 2023 data publication. Given the routes are serving as recreational use instead of being used as a commuting route, the frequency of usage is not likely to have changed significantly and therefore it is considered that the data is still sufficient to inform the assessment.



17.7.36 There are a total of seven footpaths, three restricted byways, two cycleways and four footways located within the Red Line Boundary, with an additional 11 footpaths and two bridleways located within the 500 metre Study Area. A description of WCH routes within the Study Area, including PRoW, cycleways and non-designated routes are presented in **Table 17-6**, **Table 7-7** and **Table 7-8**.

Table 17-6 – PRoW within the study area (Note: FP – Footpath BR – Bridleway; and RB – Restricted Byway) (Ref 17.3)

WCH Routes (including PRoW)	Location	Extent	Sensitivity
Attlebridge RB3	Approximately 440m north of the A1270 Fakenham Road (within the Red Line Boundary)	The restricted byway links the roundabout located west of the A1270 Northern Distributor Road to other restricted byways located east of Attlebridge. The restricted byway links to nearby agricultural fields and a shooting ground. It is likely that the restricted byway is used for agricultural and recreational purposes (due to the rural location and type of path (no lighting, with the majority of the path on grass path and concrete paving towards eastern section of the path)). It is approximately 2.2km in length.	Medium – likely for agricultural and recreational use.
Attlebridge RB4	North of the A1270 Fakenham Road (within the Red Line Boundary)	The restricted byway links the A1270 Fakenham Road and other restricted byways in the north of the Proposed Scheme near Upgate. The restricted byway links to nearby agricultural fields and shooting ground. It is likely that the restricted byway is used for agricultural and recreational purposes (due to the rural location, sand track and no lighting). It is approximately 440m in length.	Medium – likely for agricultural and recreational use and alternative routes can be taken.
Ringland FP1	Approximately 250m south of the A1270 Fakenham Road and along The Street (within the Red Line Boundary)	The footpath links agricultural fields located north of Ringland and provides direct access to the community in Ringland. It is likely that the footpath is used for agricultural and recreational purposes (due to the rural location, grass path and sand track and no lighting). It is approximately 1km in length.	Medium – likely for agricultural and recreational use.

WCH Routes (including PRow)	Location	Extent	Sensitivity
Weston Longville FP9	Between Weston Road and The Broadway (within the Red Line Boundary)	<p>The footpath links Weston Road and The Broadway. It also provides connectivity to wider road network with pedestrian use and agricultural fields. It is likely that the footpath is used for agricultural and recreational purposes (due to the rural location and type of path (no lighting, grass path and sand track, limited or no access to facilities)).</p> <p>It is approximately 670m in length.</p>	Medium – likely for agricultural and recreational use and alternative routes can be taken.
Honingham FP5	Between Weston Road and The Broadway (within the Red Line Boundary)	<p>The footpath links Weston Road and The Broadway. It also provides connectivity to wider road network with pedestrian use and agricultural fields. It is likely that the footpath is used for agricultural and recreational purposes (due to the rural location and type of path (no lighting, grass path and sand track, limited or no access to facilities)).</p> <p>It is approximately 70m in length.</p>	Medium – likely for agricultural and recreational use.
Honingham RB1	North and South of the A47 (within the Red Line Boundary)	<p>The restricted byway links the agricultural fields to the north of the A47 and crosses the A47 to the south at Honingham. It is likely that the restricted byway is used for agricultural and recreational purposes (due to the rural location and type of path (no lighting, grass path, limited or no access to facilities)).</p> <p>It is approximately 1.7km in length.</p>	Medium – likely for agricultural and recreational use and alternative routes can be taken.
Weston Longville FP1	Between Morton Lane and Rectory Road (with the Red Line Boundary)	<p>The footpath links agricultural fields to the south of Morton Lane towards Weston Longville. It is likely that the footpath is used for agricultural and recreational purposes (due to the rural location and type of path (no lighting, grass path, limited or no access to facilities)).</p> <p>It is approximately 1.4km in length.</p>	Medium – likely for agricultural and recreational use.

WCH Routes (including PRow)	Location	Extent	Sensitivity
Weston Longville FP7	North of Rectory Road (with the Red Line Boundary)	The footpath links agricultural fields to the west of Weston Longville. It is likely that the footpath is used for agricultural and recreational purposes (due to the rural location and type of path (no lighting, grass path, limited or no access to facilities)). It is approximately 660m in length.	Medium – likely for agricultural and recreational use.
Ringland FP2	Approximately 730m south of the A1270 Fakenham Road and along Back Lane (within the Red Line Boundary)	The footpath links the agricultural fields located north of Ringland. It is likely that the footpath is used for agricultural and recreational purposes (due to the rural location and grass path with no lighting). It is approximately 1.7km in length.	Medium – likely for agricultural and recreational use and alternative routes can be taken.
Ringland FP3	Approximately 520m north of Ringland Lane and along The Street (within the Red Line Boundary)	The footpath links Ringland to the agricultural fields located north of Ringland. It is likely that the footpath is used for agricultural and recreational purposes (due to the rural location and grass path and sand track with no lighting)). It is approximately 900m in length.	Medium – likely for agricultural and recreational use and alternative routes can be taken.
Ringland FP4	Along The Street (directly east of the Red Line Boundary)	The footpath links Ringland to the agricultural fields located north of Ringland. It is likely that the footpath is used for agricultural and recreational purposes (due to the rural location and grass path and sand track with no lighting)). It is approximately 800m in length.	Medium – likely for agricultural and recreational use and alternative routes can be taken.
Attlebridge FP5	South of the A1270 Fakenham Road (directly adjacent to the Red Line Boundary)	The footpath links the A1270 Fakenham Road to the farmland located north of Ringland. It is likely that the footpath is used for agricultural and recreational purposes (due to the rural location and type of path (no lighting, sand track, limited or no access to facilities)). It is approximately 250m in length.	Medium – likely for agricultural and recreational use.

WCH Routes (including PRow)	Location	Extent	Sensitivity
Weston Longville FP8	North of Rectory Road (located directly south of the Red Line Boundary)	The footpath links agricultural fields and wider PRow network west of Weston Longville. It is likely that the footpath is used for agricultural and recreational purposes (due to the rural location and type of path (no lighting, grass path, limited or no access to facilities)). It is approximately 940m in length.	Medium – likely for agricultural and recreational use.
Attlebridge BR6	North of the A1270 Broadland Northway (located directly north-east of the Red Line Boundary)	The bridleway links restricted byways located east of Attlebridge to bridleways located north-west of Taverham, along the A1270 Broadland Northway. It is likely that the bridleway is used for agricultural and recreational purposes (due to the rural location and concrete paving with no lighting). It is approximately 490m in length.	Medium – likely for recreational use.
Weston Longville FP2	Between Morton Lane and Field Road (located approximately 150m north of the Red Line Boundary)	The footpath links Morton Lane and Field Road. It also provides connectivity to the wider footpaths and agricultural fields in Weston Longville. It is likely that the footpath is used for agricultural and recreational purposes (due to the rural location and grass path with no lighting). It is approximately 450m in length.	Medium – likely for agricultural and recreational use and alternative routes can be taken.
Weston Longville FP3	Between Field Road and Rectory Road (located approximately 470m west of the Red Line Boundary)	The footpath links Field Road and Rectory Road. It also provides connectivity to the wider footpaths and agricultural fields in Weston Longville. It is likely that the footpath is used for agricultural and recreational purposes (due to the rural location and type of path (no lighting, grass path, limited or no access to facilities)). It is approximately 1.1km in length.	Medium – likely for agricultural and recreational use and alternative routes can be taken.

WCH Routes (including PRow)	Location	Extent	Sensitivity
Weston Longville FP4	North of Rectory Road (located approximately 280m south of the Red Line Boundary)	The footpath links Rectory Road to the wider PRow network in Weston Longville. It is likely that the footpath is used for agricultural and recreational purposes (due to the rural location and type of path (no lighting, grass path, limited or no access to facilities)). It is approximately 240m in length.	Medium – likely for agricultural and recreational use.
East Tuddenham FP1	Between Sandy Lane and B1535 Wood Lane (located approximately 140m west of the Red Line Boundary)	The footpath links Sandy Lane and B1535 Wood Lane. It also provides connectivity to the wider agricultural fields south of Weston Green. It is likely that the footpath is used for agricultural and recreational purposes (due to the rural location and type of path (no lighting, grass path, limited or no access to facilities)). It is approximately 550m in length.	Medium – likely for agricultural and recreational use and alternative routes can be taken.
East Tuddenham FP2	Between Sandy Lane and B1535 Wood Lane (located approximately 80m west of the Red Line Boundary)	The footpath links Sandy Lane and B1535 Wood Lane. It also provides connectivity to the wider agricultural fields south of Weston Green. It is likely that the footpath is used for agricultural and recreational purposes (due to the rural location and type of path (no lighting, grass path, limited or no access to facilities)). It is approximately 520m in length.	Medium – likely for agricultural and recreational use and alternative routes can be taken.
Honingham FP3	Between Berrys Lane and Dereham Road (approximately 470m south of the Red Line Boundary)	The footpath links Berrys Lane and Dereham Road. It also provides connectivity to the facilities within Honingham. It is likely that the footpath is used for recreational purposes (due to the rural location and grass path with no lighting). It is approximately 290m in length.	Medium – likely for recreational use and alternative routes can be taken.

WCH Routes (including PRow)	Location	Extent	Sensitivity
Morton-on-the-Hill BR1	North of Fakenham Road (approximately 400m west of the Red Line Boundary)	The bridleway links two footways within Attlebridge over River Wensum. It is likely that the footpath is used for commuting and recreational purposes (due to its location within the village). It is approximately 70m in length.	Medium – likely for recreational use and alternative routes can be taken.
Ringland FP5	Between Back Lane and The Street (approximately 300m east of the Red Line Boundary)	The footpath links Ringland to the agricultural fields located north of Ringland. It is likely that the footpath is used for agricultural and recreational purposes (due to the rural location and grass path and sand track with no lighting)). It is approximately 240m in length.	Medium – likely for recreational use and alternative routes can be taken.
Ringland FP6	Between The Street and Field Road (approximately 360m east of the Red Line Boundary)	The footpath links Ringland to the wider road network south of Ringland. It is likely that the footpath is used for agricultural and recreational purposes (due to the rural location and grass path and sand track with no lighting)). It is approximately 490m in length.	Medium – likely for recreational use and alternative routes can be taken.

Table 17-7 – Cycleways within the study area (Ref 17.4)

Cycleways	Location	Extent	Sensitivity
Marriott's Way circular (leisure route)	Along The Broadway (within the Red Line Boundary)	<p>The cycleway is a circular leisure route on public roads starting at the centre of Norwich, and extends to the rural area located north west of Norwich (e.g. Ringland, Weston Longville, Attlebridge, Taverham, Costessey and New Costessey) and back to the centre of Norwich. The cycleway is used for recreational purposes.</p> <p>It is approximately 36km in length.</p> <p>Usage of the cycleway specifically along The Broadway has been recorded in the WCHAR by pedestrians (an average of one per day (average daily two-way flows over a four-day survey period) and pedestrians with dogs (an average of one per day) but no cyclists.</p>	Medium – for recreational use. Although the path is a promoted route and provides connectivity to the communities located north-west of the outskirts of Norwich, the usage of the cycleway within the Study Area is considered to be low.
An unnamed cycleway	At the roundabout between the A1270 Fakenham Road and the A1270 Northern Distributor Road (within the Red Line Boundary)	<p>The unnamed cycleway links the westbound of the A1270 Fakenham Road to the eastbound of the A1270 Northern Distributor Road. It is likely to act as a short route to assist cyclists to cross the roundabout between the A1270 Fakenham Road and A1270 Northern Distributor Road. It is likely that the path is used for commuting or recreational purposes.</p> <p>It is approximately 250m in length.</p>	Medium – for recreational use or commuting and alternative routes can be taken.



Table 17-8 – Non-designated routes used by WCH within the study area (Ref 17.14, 17.15)

Non-designated routes	Location	Extent	Sensitivity
Breck Road	East of Weston Green (within the Red Line Boundary)	There is no pavement or any paths for WCH. However, use of the road was recorded in the WCHAR by pedestrians (an average of three per day) and cyclists (an average of five per day). It is approximately 1km in length.	Medium – likely for recreational use.



Non-designated routes	Location	Extent	Sensitivity
Weston Road	Between Weston Green and Ringland (within the Red Line Boundary)	There is no pavement or any paths for WCH. However, use of the road was recorded in the WCHAR by pedestrians (an average of four per day), pedestrians with dogs (an average of one per day), cyclists (an average of seven per day) and equestrians (an average of three per day). It is approximately 2.2km in length.	Medium – likely for recreational use.



Non-designated routes	Location	Extent	Sensitivity
Ringland Lane	Between Weston Longville and Ringland (within the Red Line Boundary)	<p>There is no pavement or any paths for WCH. However, use of the road was recorded in the WCHAR by pedestrians (an average of two per day) and cyclists (an average of 32 per day).</p> <p>The Local Access Consultation (Document Reference: 4.01.02) also recorded a comment regarding a current rat-run issue on Ringland Lane and the lane being unsafe for walking.</p> <p>It is approximately 2.6km in length.</p>	Medium – likely for recreational use.



Non-designated routes	Location	Extent	Sensitivity
Blackbreck Lane	Between Weston Green and Ringland (within the Red Line Boundary)	There is no pavement or any paths for WCH. However, use of the road was recorded in the WCHAR by pedestrians with dogs (an average of one per day (Note 1) and equestrians (an average of one per day (Note 1)). It is approximately 1.1km in length.	Medium – likely for recreational use.

Note 1 - Average daily two-way flows over a four-day survey period.



17.7.37 There are no National Trails or national or regional cycle networks within the Red Line Boundary or the Study Area.

Public Transportation

17.7.38 Bus services 608 and 23 travel along the A1067 Fakenham Road. (**Ref 17.16**). There are no bus stops, taxi ranks or rail stations located within the Red Line Boundary. There are four bus stops within the Study Area located along Fakenham Road.

Human Health

17.7.39 This section provides an overview of human health indicators for the Great Witchingham; Mattishall; Taverham North, Taverham South and Upper Wensum wards, compared where appropriate to county (Norfolk), regional (East of England) and/or national (England) performance.

Age Breakdown

17.7.40 The population of Norfolk is comparatively older than the regional and national averages, with a larger proportion of the population aged between 55 years and above 90 years. The proportion of people in age groups under 50 years is smaller than the regional and national averages, with an exception seen in the 20-24 years groups which is higher than the regional average, but lower than the national average (**Ref 17.17**).

17.7.41 **Table 17-9** breaks down the total population into five age groups and shows data from a ward, regional and national level.

17.7.42 Great Witchingham, Mattishall, Taverham South and Upper Wensum have a lower proportion of population aged 0-16 years and 16-24 years when compared to the county and national averages.

17.7.43 The proportion of the population aged 25-64 years in Taverham North (56.4%) is higher than the county average (48.7%) but in line with the national average (51.8%). The proportion of the population aged 25-64 years in Great Witchingham, Mattishall, Taverham South and Upper Wensum are largely in line with the county and national averages.



17.7.44 The proportion of the populations in Great Witchingham (28.0%), Mattishall (30.1%) and Tavernham South (30.1%) aged 65-84 years are larger than the county (24.7%) and national (18.5%) averages.

17.7.45 The size of Mattishall's population aged 85 years and above (3.7%) is larger than both the county (3.4%) and national (2.5%) averages.

Table 17-9 – Population by age group (2020) (Ref 17.18)

Ward/Area	Aged under 16 (%)	Aged 16- 24 (%)	Aged 25- 64 (%)	Aged 65- 84 (%)	Aged 85+ (%)
Great Witchingham	14.0	7.7	50.3	28.0	2.6
Mattishall	15.1	7.5	47.3	30.1	3.7
Taverham North	18.1	10.1	56.4	15.5	2.3
Taverham South	15.4	8.4	46.0	30.1	3.2
Upper Wensum	15.7	7.5	48.0	28.8	3.9
Norfolk	16.9	9.8	48.7	24.7	3.4
England	19.2	10.5	51.8	18.5	2.5

Life Expectancy

17.7.46 **Table 17-10** shows that life expectancy at birth for both males and females in Norfolk are largely in line with the regional and national averages.



Table 17-10 – Life expectancy at birth for period 2018-2020 (Ref 17.19)

Location	Male (years)	Female (years)
Norfolk	80.0	83.9
East of England	80.2	83.8
England	79.4	83.1

17.7.47 **Table 17-11** shows that Taverham South has the highest life expectancy at birth for female, whilst Great Witchingham has the highest life expectancy at birth for male when comparing with other wards. Furthermore, Great Witchingham, Mattishall and Taverham South have a higher life expectancy at birth for male and female when comparing with the county and national averages, where a significant year gap on female life expectancy at birth could be found between Taverham South and the county and national averages (of approximately four years).

Table 17-11 – Life expectancy at birth for the period 2016-2020 – Ward Level (Ref 17.20)

Location	Male (years)	Female (years)
Great Witchingham	83.4	86.4
Mattishall	80.4	85.4
Taverham North	77.9	81.3
Taverham South	81.4	87.2
Upper Wensum	79.9	86.5
Norfolk	80.0	83.9
England	79.5	83.2



Public Health Profile

17.7.48 The 2020 OHID Health Profile for Norfolk County Council compares a range of population and human health indicators for a local authority with the national average. Overall, the health of people in Norfolk is either similar or better when compared to the national average.

17.7.49 **Table 17-12** shows the indicators included within the health profile and whether they are significantly better, significantly worse or similar to the national average (statistical significance as determined by OHID).

Table 17-12 – Norfolk health indicators (Ref 17.21)

Significantly Better	Similar	Significantly Worse
<ul style="list-style-type: none"> ■ Life expectancy at birth (males) ■ Life expectancy at birth (females) ■ Under 75 mortality rate from all causes ■ Mortality rate from all cardiovascular diseases ■ Mortality rate from cancer ■ Percentage of breastfeeding initiation ■ Year 6: Prevalence of obesity (including severe obesity) ■ Percentage of children in low income families ■ Statutory homelessness rate – eligible homeless people not in priority need ■ Violent crime – hospital admission rate for violence (including sexual violence) ■ New STI diagnoses rate (excluding chlamydia aged <25) ■ TB incidence rate 	<ul style="list-style-type: none"> ■ Suicide rate ■ Killed or seriously injured on the roads ■ Emergency hospital admission rate for hip fractures ■ Estimated diabetes diagnosis rate ■ Hospital admission rate for alcohol-specific conditions ■ Smoking prevalence in adults ■ Percentage of physically active adults ■ Percentage of adults classified as overweight or obese ■ Teenage conception rate ■ Smoking prevalence in adults in routine and manual occupations ■ Infant mortality rate ■ Percentage of people in employment ■ Excess winter deaths index 	<ul style="list-style-type: none"> ■ Emergency hospital admission rate for intentional self-harm ■ Estimated dementia diagnosis rate ■ Hospital admission rate for alcohol-related conditions ■ Percentage of smoking during pregnancy ■ GCSE attainment (average attainment 8 score)



Index of Multiple Deprivation

- 17.7.50 The Indices of Multiple Deprivation (IMD) 2019 (**Ref 17.22**) use a combination of information relating to income, employment, education, health, skills and training, barrier to housing and services, and crime to create an overall score of deprivation. These scores are then used to rank specific geographical extents. A low rank indicates higher, relative deprivation; hence the most deprived area is ranked 1.
- 17.7.51 IMD data (**Ref 17.22**) is not available at ward level, but is broken down into smaller areas, known as LSOAs, which are a standard statistical geography designed to be of a similar population size, with an average of approximately 1,500 residents or 650 households in each LSOA. The Study Area includes four LSOAs: Broadland 002C, Broadland 002D, Breckland 006C and Breckland 001A.
- 17.7.52 Broadland 002D and Breckland 006C are more deprived when compared to Broadland 002C and Breckland 001A, and are amongst the 50% most deprived LSOAs in the country, with regards to overall deprivation. Broadland 002D has a ranking of 16,355 out of 32,844 LSOA's in the country (where 1 is the most deprived LSOA), while Breckland 006C has a ranking of 13,401 out of 32,844 LSOAs. Comparatively, Broadland 002C has a ranking of 19,742 out of 32,844 LSOAs and Breckland 001A has a ranking of 20,214 out of 32,844.
- 17.7.53 Across the seven domains of deprivation, Broadland 002C, Broadland 002D, Breckland 006C and Breckland 001A are amongst the 10% to 40% most deprived neighbourhoods in the country for "Barriers to housing and services" and "Living environment deprivation" domains. Breckland 006C and Breckland 001A also fall within the 30% and 50% most deprived neighbourhoods in the country for "Education, skills and training" domain respectively. Whilst for the remaining domains, Broadland 002C, Broadland 002D, Breckland 006C, and Breckland 001A are among the least deprived neighbourhoods in the country.



17.7.54 The following indicators provide information on the respiratory health of the population in Norfolk, which includes residents living within the Study Area, compared to regional and national averages.

17.7.55 **Table 17-13** indicates that the percentage of patients recorded on practice disease registers with chronic obstructive pulmonary disease (COPD) in Norfolk is higher than the regional and national averages.

Table 17-13 – Percentage of patients with COPD as recorded on practice disease registers (2022/23) (Ref 17.23)

Area	Percentage of Patients with COPD
Norfolk	2.2%
East of England region	1.8%
England	1.8%

17.7.56 **Table 17-14** shows that the proportion of children with asthma in Norfolk is higher than the regional and national averages..

Table 17-14 – Percentage of patients 6 years and older with asthma(2022/23) (Ref 17.24)

Area	Percentage of Patients with asthma (6+ years)
Norfolk	7.8
East of England region	6.8
England	6.5

Summary

17.7.57 Overall, the population of Norfolk is older but has a higher life expectancy, and has better or similar health when compared to the population of England as a whole. However, the population of Norfolk within the study area is typically living in some level of deprivation, and in Norfolk a higher proportion



of patients have COPD and asthma compared to England averages. As such, the population situated within the Study Area is considered to have a medium sensitivity to any changes to health determinants brought about by the Proposed Scheme.

Socio-economics

17.7.58 According to NOMIS, the job density levels (i.e. the ratio of total jobs to the population aged 16-64) in Norfolk in 2021 was 0.79 (this being the most up-to-date data available on NOMIS at the time of writing this chapter and which has been used to inform this baseline). This is lower than the average across East of England (0.84) and Great Britain (0.85). This indicates that there is lower but some availability of employment opportunities within the local authority area when compared with the region as a whole.

17.7.59 There were estimated to be 358,000 jobs in Norfolk in 2021, of which 64.5% were full-time and 35.8% part-time. **Table 17-15** shows the proportion of total employees working in each industry sector in 2021.

Table 17-15 – Proportion of total employees in each industry sector in Norfolk, East of England and Great Britain in 2021

Industry Sector	Norfolk (%)	East of England (%)	Great Britain (%)
B: Mining and quarrying	0.3	0.1	0.1
C: Manufacturing	9.8	7.3	7.6
D: Electricity, gas, steam and air conditioning supply	0.1	0.2	0.4
E: Water supply; sewerage, waste management and remediation activities	0.7	0.7	0.7
F: Construction	5.3	5.9	4.9



Industry Sector	Norfolk (%)	East of England (%)	Great Britain (%)
G: Wholesale and retail trade; repair of motor vehicles and motorcycles	16.8	15.2	14.4
H: Transportation and storage	3.6	5.5	5.1
I: Accommodation and food service activities	9.5	6.9	7.5
J: Information and communication	2.0	4.1	4.5
K: Financial and insurance activities	3.1	2.1	3.6
L: Real estate activities	2.0	1.7	1.8
M: Professional, scientific and technical activities	6.1	9.2	8.9
N: Administrative and support service activities	7.3	11.8	8.9
O: Public administration and defence; compulsory social security	4.7	3.4	4.6
P: Education	9.2	9.5	8.8
Q: Human health and social work activities	15.6	12.2	13.7
R: Arts, entertainment and recreation	2.5	2.2	2.3
S: Other service activities	1.7	1.8	1.9

Source: NOMIS (**Ref 17.40**)



17.7.60 **Table 17-15** shows that the Norfolk and East of England economies comprise a broad range of industries, with the wholesale and retail trade; repair of motor vehicles and motorcycles; and human health and social work activities being the largest employment industries within the county (16.8% and 15.6% respectively). Norfolk has a similar proportion of employees (5.3%) in the construction sector when comparing with the regional (5.9%) and national (4.9%) averages. The manufacturing sector within Norfolk has a relatively higher proportion of employees (9.8%) than the average for the East of England (7.3%) and Great Britain (7.6%).

Future Baseline

Land-use and Accessibility

17.7.61 There are no housing or employment allocations planned within the Site Allocations DPD (**Ref 17.10**), Joint Core Strategy (**Ref 17.11**) or Emerging GNLP (**Ref 17.34**) that are located within the Red Line Boundary. Therefore, land for private properties, business premises and agricultural circumstances are likely to remain mostly unchanged should the Proposed Scheme not proceed.

17.7.62 No other planned PRow improvement or new PRow provision has been identified in the area. Therefore, without the Proposed Scheme, such improvement or provision would not be in place. It is anticipated that there would be an increase in community severance due to potential worsening traffic conditions and congestion.

Human Health

17.7.63 The Norfolk Insight (**Ref 17.25**) shows that the projected population in Norfolk would increase by 115,210 (12.6%) by 2043.

17.7.64 As previously stated, the proportion of older people in Norfolk is larger than the national average, and this population is projected to increase at a greater rate than the rest of England. Over the next ten years, the 65 years and older age bands are predicted to see the greatest increase as the population as a



whole grows (**Ref 17.26**). Norfolk Insight (**Ref 17.25**) indicates that population aged over 65 would increase by 5.7% by 2043.

17.7.65 The increasing older population in Norfolk is likely to result in greater pressure on community facilities, especially elderly care related services including care homes and medical services. Older people are also more likely to rely on private vehicle transport and public transport, especially for local journeys. This may increase pressure on local road capacity and public transport services in the future.

Socio-economics

17.7.66 Given that there is no employment land allocation within the Red Line Boundary, the local economy is anticipated to remain largely unchanged for the future baseline should the Proposed Scheme not go ahead. Future development of land or changes of land use may be possible but cannot be predicted.

17.8 Sensitive Receptors

17.8.1 The following sensitive receptors have been identified:

- Land use and accessibility:
 - Private property and housing: 14 private residential properties (all of medium sensitivity);
 - Community land and assets: One open space (of high sensitivity), four recreational facilities (ranging from medium to high sensitivity) and five communities and their community facilities (range from negligible to very high sensitivity);
 - Development land and businesses: Two businesses premises (ranging from medium to very high sensitivity);
 - Agricultural land holdings: Ten agricultural land holdings (ranging from medium to high sensitivity) and five other land holdings (of low sensitivity); and



- WCH: Users of 18 footpaths (all of medium sensitivity), three restricted byways (all of medium sensitivity), two bridleways (of medium sensitivity), two cycleways (all of medium sensitivity) and four footways (all of medium sensitivity);
- Human health: Population in Great Witchingham, Mattishall, Taverham North and Taverham South (of medium sensitivity); and
- Socio-economics: Norfolk economy and East of England economy.

17.8.2 All key sensitive receptor locations within the 500m study area are shown on **Figure 17.1: Population and Human Health Receptors** in **Appendix 17.2** (Document Reference: 3.17.02).

17.9 Assessment of Potential Effects, Mitigation and Residual Effects

Construction Phase

Construction Phase Embedded Mitigation

17.9.1 The measures to mitigate the potential effects on individual farms have been considered in the design of the Proposed Scheme to ensure continual agricultural access to land during and following construction of the Proposed Scheme.

17.9.2 Further embedded mitigation measures for human health related topics for construction phase are included as follows:

- **Chapter 6: Air Quality** (Document Reference: 3.06.00), **Section 6.6** Assessment of Potential Effects, Mitigation, Residual Effects and Monitoring states that Best Practicable Means (BPM) should be adopted throughout the Proposed Scheme. These measures may include appropriate storage of dusty materials, appropriate screening/containment to minimise dust emissions, and the control of vehicle emissions in order to minimise dust and poor air quality effects on local residents.



- **Chapter 7: Noise and Vibration** (Document Reference: 3.07.00), **Section 7.6** Assessment of potential effects, mitigation, monitoring and residual effects states that BPM should be adopted throughout the Proposed Scheme, which would include activities such as siting plant items so that noise and vibration is minimised nearby sensitive properties, not allowing construction vehicles to idle on local roads while waiting to enter site, and ensuring the general induction training for staff includes the importance of noise and vibration and its potential to affect local residents.
- **Chapter 9: Landscape and Visual Effects** (Document Reference: 3.09.00), **Section 9.7** Scheme Design and Mitigation details the primary mitigation measures embedded into the Proposed Scheme's design which includes retaining, and where possible enhancing, existing trees and established areas of vegetation.
- **Chapter 12: Road Drainage and the Water Environment** (Document Reference: 3.12.00), **Section 12.6** Assessment of Potential Effects, Mitigation and Residual Effects sets out the mitigation measures that have been considered in the construction phase assessment, primarily measures included in the **Outline Construction Mitigation Plan (OCMP)** (Document Reference: 3.01.01). Good practice guidance for the control of water pollution from construction sites will be followed, and most construction compounds are located away from watercourses or identified overland flow routes. Specific mitigation would be included for the two small areas where temporary works are required within the active floodplain of River Wensum. The design of these works is ongoing, but core elements are detailed in **Appendix 12.2: Flood Risk Assessment Sub Appendix K: Design Drawings** (Document reference 3.12.02k). These include the introduction of flood relief culverts beneath the temporary works platform to reduce the risk of flooding upstream. .



- **Chapter 19: Traffic and Transport** (Document Reference: 3.19.00), **Section 19.16** Tertiary Mitigation sets out the standard management practices that would be embedded into the Proposed Scheme during construction, including an OCEMP, a Construction Traffic Management Plan, and a Construction Worker Travel Plan.

Land Use: Private property and housing

17.9.3 Two residential properties (PP1 and PP4– see **Figure 17.1 Population and human health receptors** (Document Reference: 3.17.02)) located on the A1067 Fakenham Road and off The Street (of medium sensitivity) have been purchased by the Applicant. PP1 would fall within the temporary works area for storage, stockpiling, compound, delivery and material treatment area during construction. PP4 would fall within an area to be used for proposed and existing landscaping and planting. One residential property (as shown on **Figure 17.1** (Document Reference: 3.05.00 as PP10) which is located outside of the redline boundary, has also been purchased by the Applicant due to proximity of the Proposed Scheme. PP1, PP4 and PP10 will not be demolished, but a change of use for these properties is sought within the planning application for the Proposed Scheme. As such, the land take is considered to be a major magnitude of change with an impact resulting in a permanent **moderate adverse** (significant) effect for each of these properties.

17.9.4 It is likely that following the completion of construction, these properties (PP1, PP4 and PP10) will be reverted back to residential use, however for the purpose of this assessment, a worst case scenario that there will be a permanent loss of three residential properties is presented.

17.9.5 Temporary severance is anticipated for direct access of 11 properties (of medium sensitivity) located off A1270 Broadland Northway, A1067 Fakenham Road, off The Street, Ringland Lane and on Weston Road where direct access fall within the Red Line Boundary. There is likely to be potential temporary access restrictions implemented, including fencing. As such, the level of temporary severance is considered to be a moderate magnitude of



change with an impact resulting in a temporary **moderate adverse** (significant) effect.

Additional Mitigation

17.9.6 An **OCEMP** (Document Reference: 3.01.01) has been produced to outline measures to be implemented to enable access to residential properties to remain open, where practicable, along their current alignments. Alternative access will be provided throughout the construction phase if current access is inhibited.

17.9.7 Consultation will be undertaken between the residents and Principal Contractor prior to commencement of work to determine the alignment of alternative access, as set out within the OCEMP. Determined measures will be outlined in a Construction Traffic Management Plan (CTMP).

Residual Effect

17.9.8 There is likely to be a direct, permanent, long-term **moderate adverse** (significant) effect on a residential property (PP1 – see **Figure 17.1 Population and human health receptors** (Document Reference: 3.17.02)) located on the A1067 Fakenham Road due to land take.

17.9.9 Access will be maintained, or alternative access will be provided to 12 properties (of medium sensitivity) located off A1270 Broadland Northway, A1067 Fakenham Road, off The Street, Ringland Lane and on Weston Road during construction, the magnitude of change, following mitigation, is considered to be minor. Therefore, there is likely to be a direct, temporary, medium-term **slight adverse** (not significant) residual effect on 12 residential properties following the implementation of mitigation measures during construction of the Proposed Scheme.

Land Use: Community Land and Assets

17.9.10 There would be no community land or assets directly affected by the construction phase of the Proposed Scheme.



- 17.9.11 Temporary severance is anticipated for users of Mid Norfolk Shooting Ground (of high sensitivity) and Khora Yoga (of medium sensitivity) during construction. This is due to potential temporary access restrictions to be implemented, including fencing and road diversions along the A1067 Fakenham Road. As such, the level of temporary severance is considered to be of a moderate magnitude of change with an impact resulting in a temporary **moderate adverse** (significant) effect.
- 17.9.12 Access to the other community land and assets in the 500 metre Study Area (as listed in **Section 17.7**) including open space and golf clubs are not likely to be directly impacted by the Proposed Scheme during construction, as they are distant from the Proposed Scheme and the construction compound. Therefore, no impacts are anticipated on users of these facilities during construction.
- 17.9.13 Temporary severance is anticipated between residents and community land and assets in Weston Longville (of very high sensitivity), and their associated community facilities during construction. This is due to potential temporary access restrictions implemented along Ringland Lane, including fencing and road diversions or closures during construction. The temporary severance is considered to be a moderate magnitude of change with an impact resulting in a temporary **large adverse** (significant) effect on severance in Weston Longville.
- 17.9.14 The communities of Weston Green (west of the Red Line Boundary), Honingham (south of the Red Line Boundary), Ringland (east of the Red Line Boundary) and Attlebridge (north of the Red Line Boundary) are not likely to be severed by the Proposed Scheme during construction as they are distant from the Proposed Scheme and its construction compound. As such, no impact is anticipated on these receptors during construction.



Additional Mitigation

17.9.15 An OCEMP outlines the measures to be implemented to enable access to community land and assets to be maintained where practicable. These include:

- Access to residential properties will remain open, where practicable. Alternative access will be provided throughout construction phase if current access is inhibited. Access protocols will be discussed in advance between the Principal Contractor and affected residents to ensure safe passage and will be added to a Construction Traffic Management Plan (CTMP).
- Where there would be any temporary or permanent diversions or closures to public rights of way during construction, the Applicant would seek to identify an alternative. The Applicant will consult with the local authority access officer and Traffic Regulation Orders (TRO) will be applied for where traffic regulation is necessary.
- The Applicant would seek to provide alternative access to Mid Norfolk Shooting Ground and Khora Yoga if existing access is inhibited, with discussion to be organised by the Principal Contractor with the business premises to determine alternative access if required. Access measures regarding temporary supervised traffic control to the business premises would be added to a Construction Traffic Management Plan (CTMP). The Applicant will aim to ensure visitors and users can access Mid Norfolk Shooting Ground and Khora Yoga.
- A section of the Marriott's Way circular (on carriageway leisure route) will be diverted away from the Site Boundary during construction and reconnect to the rest of the on-carriageway leisure route where possible. The diversionary route will incorporate good practice with regards to safety where possible and seek to maintain the same standards of accessibility for users. Contractor should seek to identify a



safe diversionary route based on the requirement stated in the LTN 1/20 Cycle infrastructure design.

17.9.16 The OCEMP (**Section 4.9** Population and Human Health) sets out the Contractor's responsibility to notify local communities of any route diversions prior to the commencement of construction.

Residual Effect

- Access will be maintained, or a diversion will be provided to users of Mid Norfolk Shooting Ground (of high sensitivity) and Khora Yoga (of medium sensitivity) during construction. The magnitude of change, following mitigation, is negligible. Therefore, there is likely to be a direct, temporary, medium-term **slight adverse** (not significant) residual effect on Mid Norfolk Shooting Ground and Khora Yoga.
- Access to community land and assets along Ringland Lane will be maintained, or a diversion will be provided during construction. Therefore, the magnitude of change, following mitigation, is minor for severance between residents and community land and assets in Weston Longville (of very high sensitivity). Therefore, there is likely to be a direct, temporary, medium-term **moderate adverse** (significant) effect on severance of the community and community facilities of Weston Longville.

Land Use: Development Land and Businesses

17.9.17 Temporary severance is anticipated for Mid Norfolk Shooting Ground (of very high sensitivity) and Khora Yoga (of medium sensitivity) during construction where direct access of the business premises are located within the construction work area or haul road. This is due to potential temporary access restriction to be implemented including fencing which would prevent access to the business premises completely throughout the duration of construction works. As such, the level of temporary severance is considered to be a major magnitude of change with an impact resulting in a temporary **very large**



adverse (significant) effect on Mid Norfolk Shooting Ground and temporary **moderate adverse** (significant) effect on Khora Yoga.

Additional Mitigation

17.9.18 The Applicant would seek to provide alternative access to Mid Norfolk Shooting Ground and Khora Yoga if existing access is inhibited, with consultation to be organised by the Contractor with the business premises to determine alternative access if required. Access measures regarding temporary supervised traffic control to the business premises would be added to a CTMP. The Applicant will aim to ensure recreational users can obtain access to and from Mid Norfolk Shooting Ground and Khora Yoga throughout the construction phase.

Residual Effect

17.9.19 Access to Mid Norfolk Shooting Ground (of very high sensitivity) and Khora Yoga (of medium sensitivity) will be maintained where practicable. The magnitude of change, following mitigation, is considered to be negligible. Therefore, there is likely to be a direct, temporary, medium-term **slight adverse** (not significant) effect on Mid Norfolk Shooting Ground and Khora Yoga.

Land Use: Agricultural Land Holdings

17.9.20 The impacts to be considered during the construction phase concern the temporary and permanent loss of land and farm infrastructure from agricultural land holdings due to the construction of the scheme within the Site Boundary; and the temporary and permanent severance of agricultural land holdings due to the construction of the scheme within the Site Boundary.

Table 17-16 – Potential effect on agricultural land holdings during construction

Agricultural land holdings	Area Required for Proposed Scheme (temporary and permanent)	Sensitivity	Magnitude of change	Significance of effect
1	<p>During construction, it is predicted that there would be 3.3ha of land required, all of which would also be required permanently for the Proposed Scheme. An additional 3.0ha would be required permanently for environmental mitigation.</p> <p>The proportion of the holding required temporarily is 17% and permanently (including environmental mitigation) 32%.</p> <p>Permanent minor severance is anticipated with adequate accessibility.</p>	Medium	Moderate	Temporary and permanent moderate adverse effect (significant)
7	<p>During construction, it is predicted that there would be 7.0ha of land required, with 4.1ha reinstated and returned to the land holding on completion, leaving 2.9ha required permanently for the Proposed Scheme. An additional 0.7ha would be required permanently for environmental mitigation.</p> <p>The proportion of the holding required temporarily is 19% and permanently (including environmental mitigation) 10%.</p> <p>Permanent minor severance is anticipated with adequate accessibility.</p>	Medium	Moderate	Temporary and permanent moderate adverse effect (significant)

Agricultural land holdings	Area Required for Proposed Scheme (temporary and permanent)	Sensitivity	Magnitude of change	Significance of effect
9 and 10 (Moreton Hall Estate)	<p>During construction, it is predicted that there would be 44.6ha of land required, with 9.3ha reinstated and returned to the land holding on completion, leaving 35.3ha required permanently for the Proposed Scheme. An additional 60.2ha would be required permanently for environmental mitigation.</p> <p>The proportion of the holding required temporarily is 13% and permanently (including environmental mitigation) 27%.</p> <p>Permanent minor severance is anticipated with adequate accessibility.</p>	High (worst-case for holding 9)	Moderate	Temporary and permanent large adverse effect (significant)
12	<p>During construction, it is predicted that there would be 0.2ha of land required, all of which would also be required permanently for the Proposed Scheme.</p> <p>The proportion of the holding required permanently is 21%.</p> <p>Permanent negligible severance is anticipated.</p>	Low	Moderate	Temporary and permanent slight adverse effect (not significant)

Agricultural land holdings	Area Required for Proposed Scheme (temporary and permanent)	Sensitivity	Magnitude of change	Significance of effect
14 (Honingham Thorpe Farms)	<p>During construction, it is predicted that there would be 28.2ha of land required, with 5.9ha reinstated and returned to the land holding on completion, leaving 22.3ha required permanently for the Proposed Scheme. An additional 18.9ha would be required permanently for environmental mitigation.</p> <p>The proportion of the holding required temporarily is 7% and permanently (including environmental mitigation) 11%.</p> <p>Permanent minor severance is anticipated with adequate accessibility.</p>	High	Moderate	Temporary and permanent large adverse effect (significant)
17 (Suffolk Life Trustee Co Ltd.)	<p>During construction, it is predicted that there would be 0.15ha of land required, all of which would also be required permanently for the Proposed Scheme.</p> <p>The proportion of the holding required permanently is 15%.</p> <p>Severance impacts are not clear via publicly available information.</p>	Low	Moderate	Temporary and permanent slight adverse effect (not significant)

Agricultural land holdings	Area Required for Proposed Scheme (temporary and permanent)	Sensitivity	Magnitude of change	Significance of effect
18	<p>During construction, it is predicted that there would be 0.85ha of land required, all of which would also be required permanently for the Proposed Scheme.</p> <p>The proportion of the holding required permanently is 100%.</p> <p>As there will be 100% land-take, there are no severance impacts.</p>	Low	Major	Temporary and permanent moderate adverse effect (significant)
19	<p>During construction, it is predicted that there would be 0.3ha of land required, all of which would also be required permanently for the Proposed Scheme.</p> <p>The proportion of the holding required permanently is 24%.</p> <p>Permanent minor severance is anticipated with adequate accessibility.</p>	Low	Moderate	Temporary and permanent slight adverse effect (not significant)

Agricultural land holdings	Area Required for Proposed Scheme (temporary and permanent)	Sensitivity	Magnitude of change	Significance of effect
32	<p>During construction, it is predicted that there would be 4.6ha of land required, with 2.2ha reinstated and returned to the land holding on completion, leaving 2.4ha required permanently for the Proposed Scheme. An additional 18.9ha would be required permanently for environmental mitigation.</p> <p>The proportion of the holding required temporarily is 87% and permanently 45%.</p> <p>Permanent moderate severance is anticipated with limited accessibility.</p>	High	Major	Temporary and permanent large adverse effect (significant)
44 (Easton Estate)	<p>During construction, it is predicted that there would be 45.4ha of land required, with 11.1ha reinstated and returned to the land holding on completion, leaving 34.4ha required permanently for the Proposed Scheme. An additional 15.9ha would be required permanently for environmental mitigation.</p> <p>The proportion of the holding required temporarily is 5% and permanently (including environmental mitigation) 5%.</p> <p>Permanent minor severance is anticipated with adequate accessibility.</p>	Medium	Minor	Temporary and permanent slight adverse effect (not significant)

Agricultural land holdings	Area Required for Proposed Scheme (temporary and permanent)	Sensitivity	Magnitude of change	Significance of effect
45	<p>During construction, it is predicted that there would be 20.8ha of land required, with 9.3ha reinstated and returned to the land holding, leaving 11.5ha required permanently for the Proposed Scheme.</p> <p>The proportion of the holding required temporarily is 18% and permanently 10%.</p> <p>Moderate severance is anticipated with limited accessibility.</p>	Medium	Moderate	Temporary and permanent moderate adverse effect (significant)
Marl Hill Road/Morton Lane	<p>During construction, it is predicted that there would be 0.1ha of land required, all of which would also be required permanently for the Proposed Scheme.</p> <p>The proportion of the holding required permanently is 0.1%.</p> <p>No severance is anticipated.</p>	Medium	Negligible	Permanent neutral effect (not significant)



Additional Mitigation

17.9.21 There are no additional mitigation measures proposed.

Residual Effect

17.9.22 Given that there are no additional mitigation measures suggested, the effects on agricultural land holdings reported in **Table 17-16** remain unchanged.

Land Use: WCH

17.9.23 The Proposed Scheme is anticipated to result in temporary disruption of some PRow, cycleways and footways. The potential effects on WCH routes are presented in **Table 17-17**, for which the assessment looks only at effects of the temporary closures and that the permanent changes to the public rights are assessed under the operation effects. Where some WCH routes are outlined in **Table 17-17** as temporarily closed, it should be noted that this is prior to new and revised routes being open for use during operation, as outlined in **Table 17-19** and in **Figure 17.2**. Alternative routes will be outlined where practicable within applications for temporary traffic regulation orders (TTRO) where temporary PRow closures apply, and where a formal diversion route is not identified below in **Table 17-17**. These will be determined by the Principal Contractor, in consultation with the local authority access officer.

Table 17-17 – Effect on users of WCH routes during construction

WCH route	Sensitivity	Impact on the route	Magnitude of change	Significance of effect* *denotes where a range of level of effect is applicable in Table 3.8.1 in DMRB LA 104, and professional judgement has been applied to determine the significance of effect.
Attlebridge RB3	Medium	Mostly (more than three quarters of its length) remain at its current alignment, except for the easternmost section of the restricted byway where it falls within the Red Line Boundary and would be temporarily closed during construction.	Minor adverse	Temporary slight adverse (not significant)
Attlebridge RB4	Medium	Partly remain at its current alignment, except for the southernmost section of the restricted byway where it falls within the Red Line Boundary and would be temporarily closed during construction.	Moderate adverse	Temporary moderate adverse (significant)
Ringland FP1	Medium	Partly remain at its current alignment, partly falls within the Red Line Boundary. The footpath would be temporarily closed during construction.	Moderate adverse	Temporary moderate adverse (significant)
Weston Longville FP9	Medium	The entire route falls within the Red Line Boundary and would be temporarily closed during construction.	Major adverse	Temporary moderate adverse (significant)
Honingham FP5	Medium	The entire route falls within the Red Line Boundary and would be temporarily closed during construction.	Major adverse	Temporary moderate adverse (significant)

WCH route	Sensitivity	Impact on the route	Magnitude of change	Significance of effect* *denotes where a range of level of effect is applicable in Table 3.8.1 in DMRB LA 104, and professional judgement has been applied to determine the significance of effect.
Honingham RB1	Medium	Partly remain at its current alignment, partly falls within the Red Line Boundary. The Restricted Byway would be permanently stopped up during construction.	Moderate adverse	Temporary moderate adverse (significant)
Weston Longville FP1	Medium	Partly remain at its current alignment, partly falls within the Red Line Boundary. Temporary closure of the footpath is likely to be required during construction to facilitate grassland creation/enhancement.	Moderate adverse	Temporary moderate adverse (significant)
Weston Longville FP7	Medium	Partly remain at its current alignment, partly falls within the Red Line Boundary. Temporary closure of the footpath is likely to be required during construction to facilitate grassland creation/enhancement.	Moderate adverse	Temporary moderate adverse (significant)
Ringland FP2	Medium	Partly remain at its current alignment, partly falls within the Red Line Boundary. Temporary closure of the footpath is likely to be required during construction to facilitate hedge creation/enhancement.	Moderate adverse	Temporary moderate adverse (significant)

WCH route	Sensitivity	Impact on the route	Magnitude of change	Significance of effect* <small>*denotes where a range of level of effect is applicable in Table 3.8.1 in DMRB LA 104, and professional judgement has been applied to determine the significance of effect.</small>
Ringland FP3	Medium	Most of the footpath would fall within the Red Line Boundary. Temporary closure of the footpath is likely to be required during construction to facilitate hedge creation/enhancement.	Moderate adverse	Temporary moderate adverse (significant)
Attlebridge FP5	Medium	Although most of the footpath falls beyond the Red Line Boundary, temporary closure of the footpath is likely to be required during construction to facilitate the A1067 improvement.	Moderate adverse	Temporary moderate adverse (significant)
Marriott's Way circular (leisure route)	Medium	Mostly remains at its current alignment, except for a short section along The Broadway, Church Street, Marl Hill and Honingham Lane. Some sections are likely to be temporarily closed during construction. The alternative diversion routes may include Ringland Lane, Weston Road or Breck Lane.	Minor adverse	Temporary slight adverse (not significant)
An unnamed cycleway	Medium	The entire route falls within the Red Line Boundary and would be temporarily closed during construction.	Major adverse	Temporary moderate adverse (significant)

WCH route	Sensitivity	Impact on the route	Magnitude of change	Significance of effect* <small>*denotes where a range of level of effect is applicable in Table 3.8.1 in DMRB LA 104, and professional judgement has been applied to determine the significance of effect.</small>
Breck Road	Medium	Most of the road falls within the Red Line Boundary and would be temporarily closed (except for access) during construction.	Major adverse	Temporary moderate adverse (significant)
Weston Road	Medium	Partly remain at its current alignment, partly falls within the Red Line Boundary. The section that falls within the Red Line Boundary would be temporarily closed (except for access) during construction.	Moderate adverse	Temporary moderate adverse (significant)
Ringland Lane	Medium	Most of the road falls within the Red Line Boundary and would be temporarily closed (except for access) during construction.	Major adverse	Temporary moderate adverse (significant)
Blackbreck Lane	Medium	Partly remain at its current alignment, partly falls within the Red Line Boundary. The section that falls within the Red Line Boundary would be temporarily closed (except for access) during construction.	Moderate adverse	Temporary moderate adverse (significant)
Ringland FP4 and Attlebridge BR6	Medium	Given the PRoW are located adjacent to the Red Line Boundary, they are not likely to be affected during construction.	No change	Temporary neutral effect (not significant)

WCH route	Sensitivity	Impact on the route	Magnitude of change	Significance of effect* *denotes where a range of level of effect is applicable in Table 3.8.1 in DMRB LA 104, and professional judgement has been applied to determine the significance of effect.
Weston Longville FP2, Weston Longville FP3, Weston Longville FP4, Weston Longville FP8, East Tuddenham FP1, East Tuddenham FP2, Honingham FP3, Morton-on-the-Hill BR1, Ringland FP5 and Ringland FP6	Medium	Given the PRow are distant from the Red Line Boundary, they are not likely to be affected during construction.	No change	Temporary neutral effect (not significant)

Note: * denotes where a range of level of effect is applicable in Table 3.8.1 in DMRB LA 104, and professional judgement has been applied to determine the significance of effect.



Additional Mitigation

17.9.24 There are no temporary diversionary routes (new routes acting as a temporary alternative, rather than a redirection on existing alternative routes on the road and PRow network) identified for affected PRow listed in **Table 17-17**,

17.9.25 An **OCEMP** (Document Reference: 3.03.01) has been produced, outlining measures to be implemented to ensure a section of the Marriott's Way circular (leisure route) will be diverted away from the Red Line Boundary by the Contractor during construction and reconnected to the rest of the cycleway where possible. The alternative diversion route may include Ringland Lane, Weston Road or Breck Lane. A Temporary Traffic Regulation Order (TTRO) for this diversion will be applied for and Public Information Notices published in advance. The diversionary route will incorporate good practice with regards to safety. The Contractor should seek to include details of this safe diversionary route within the CEMP.

Residual Effect

17.9.26 Given that there are no temporary diversionary routes identified for affected PRow listed in **Table 17-17**, an unnamed cycleway and non-designated routes during construction, the effects on these WCH remain unchanged (although alternative routes will be advertised).

17.9.27 Marriott's Way circular (leisure route) (of medium sensitivity) will be diverted onto a safe diversionary route to re-join the cycleway away from the Red Line Boundary, where practicable. The diverted journey length is likely to be over 500 metres. However, given the majority of Marriott's Way circular (leisure route) would remain at its current alignment, the magnitude of change, following mitigation, would remain unchanged as minor. Therefore, there is likely to be a direct, temporary, medium-term **slight adverse** (not significant) effect on users of Marriott's Way circular (leisure route).



Human Health

- 17.9.28 PRow and cycleways provide opportunities for walking and cycling for both recreation and as a means of travel between community facilities and residential areas. As stated above, the construction phase of the Proposed Scheme is anticipated to result in temporary disruption to PRow, cycleways and non-designated routes, which could mean routes are not able to be used, or journey times are increased, resulting in people being deterred from using them. **Chapter 9: Landscape and Visual Effects** (Document Reference: 3.09.00), **Section 9.8** Assessment of Potential Effect, Mitigation and Residual Effects identified an adverse visual amenity change on PRow during construction, which could also deter people from using these routes. The temporary changes in accessibility and amenity for WCH who use these routes is likely to result in **negative** health outcomes associated with physical activity, accessibility and social cohesion as a result of the Proposed Scheme prior to mitigation.
- 17.9.29 **Chapter 6: Air Quality** (Document Reference: 3.06.00), **Section 6.6** Assessment of Potential Effect, Mitigation and Residual Effects identifies that there is potential for a 'large' risk of dust from construction activities to human health (i.e. on 28 residential properties). **Negative** health outcomes associated with respiratory and cardiovascular diseases are anticipated during the construction phase of the Proposed Scheme prior to mitigation.
- 17.9.30 **Chapter 7: Noise and Vibration** (Document Reference: 3.07.00), **Section 7.6** Assessment of Potential Effect, Mitigation and Residual Effects identified that there is potential for "Moderate" or "Major" significant adverse noise impacts at two sample receptors as a result of on-site construction noise during the daytime based on the worst-case scenario. Significant effects have also been identified for three receptors due to night-time noise based on the worst-case scenario, and the assumption that noise levels exceed the standard durations set



out in DMRB LA 111. Noise pollution can have wide-ranging impacts on mental health including increased stress and anxiety. As such, **negative** health outcomes associated with mental health at these receptors are anticipated during construction prior to mitigation.

17.9.31 During construction, a temporary adverse visual amenity change has been identified in **Chapter 9: Landscape and Visual Effects** (Document Reference: 3.09.00), **Section 9.8** Assessment of Potential Effect, Mitigation and Residual Effects on properties and farms, as well as local communities. The temporary changes on visual amenity for local residents is likely to have **negative** health outcomes associated with mental health (e.g. stress and anxiety) (**Ref. 17.38**) as a result of the Proposed Scheme prior mitigation.

17.9.32 A corner of a property at Old Hall Mill Farm, located beyond the Red Line Boundary, is likely to be affected by increases in water levels as identified in **Appendix 12.2 Flood Risk Assessment** (Document Reference: 3.12.02). Document Reference: However, given the duration of the temporary construction works (2 years) the residual risk of a flood event is low and considered to be acceptable. As such, **neutral** health outcomes associated with mental health (e.g. stress and anxiety) are anticipated as a result of during construction.

17.9.33 A temporary negligible adverse effect has been identified for fear and intimidation in **Chapter 19: Traffic and Transport** (Document Reference: 3.19.00) during construction. As such, **neutral** health outcomes associated with mental health (e.g. fear and intimidation) are anticipated.

17.9.34 Using the socio-economics assumption in **paragraphs 17.6.45 to 17.6.55**, the Proposed Scheme is anticipated to generate construction employment and GVA during the two-year construction phase. These employment gains are likely to result in **positive** health outcomes



associated with improved mental and physical health and provide opportunities for social contact.

Additional Mitigation

17.9.35 The diversionary route of Marriott's Way circular (leisure route) will incorporate good practice measures with regards to safety, including street lighting provision, and seek to maintain the same standards of accessibility for users. Inclusion of these measures in the diverted route will help encourage existing route users to use the diversion, enabling them to continue their pursuit of outdoor recreational activities.

17.9.36 No further mitigation beyond what is outlined within **Chapter 6: Air Quality** (Document Reference: 3.06.00), **Chapter 7: Noise and Vibration** (Document Reference: 3.07.00) and **Chapter 9: Landscape and Visual Effects** (Document Reference: 3.09.00) is recommended. These measures include:

- **Chapter 6: Air Quality:** The implementation of Best Practicable Means and measures listed out in OCEMP by the Contractor to mitigate potential dust impacts. These include but are not limited to, storage of potentially dusty materials as far away as practicable from sensitive receptors and with appropriate screening/containment to minimise dust emissions; and damping down of unpaved surfaces during dry conditions to minimise dust emissions. Detail of measures are provided in **Chapter 6: Air Quality, Section 6.6: Assessment of Potential Effects, Mitigation and Residual Effects**.
- **Chapter 7: Noise and Vibration:** Further assessments will be undertaken to confirm whether thresholds will be exceeded for night-time noise, and if so temporary re-housing should be offered for the duration of the night-time works.
- **Chapter 9: Landscape and Visual Effects:** The implementation of measures listed out in OCEMP by the Contractor to mitigate



potential visual impacts. These include but are not limited to, construction operations to be limited to daylight working hours where practicable; and storage of plant and machinery away from sensitivity receptors. Detailed measures are provided in

Chapter 9: Landscape and Visual Effects, Section 9.8:

Assessment of Potential Effects, Mitigation and Residual Effects.

Residual Effects

17.9.37 Although a safe diversionary route of Marriott's Way circular (leisure route) will incorporate good practice with regards to safety, residual impact of the increased journey length and visual amenity for route users is unlikely to change and therefore **negative** health outcomes associated with physical activity, accessibility and social cohesion remain.

17.9.38 Construction dust mitigation measures will be detailed in the **OCEMP** and implemented by the Contractor, construction dust will be managed and controlled during construction. As such, a residual risk is likely to be reduced to **neutral** health outcomes associated with respiratory and cardiovascular diseases.

17.9.39 Although embedded mitigation measures have been proposed to reduce construction noise impact, an adverse change in noise level would be unavoidable during construction. Therefore, **negative** health outcomes associated with mental health related to noise remain.

17.9.40 Although visual amenity related mitigation will be in place, an adverse change in visual amenity would be unavoidable during construction. Therefore, **negative** health outcomes associated with visual amenity and mental health remain.

17.9.41 A CTMP will be in place which will ensure that **neutral** health outcomes associated with mental health are achieved.



17.9.42 **Positive** health outcomes associated with improved mental and physical health and provide opportunities for social contact will also remain.

Socio-economics

17.9.43 Construction employment is likely to result in a positive economic effect that can be estimated as a function of the scale and type of construction (infrastructure and buildings).

17.9.44 As outlined in **Section 17.7** the following section estimates gross employment arising from the Proposed Scheme during the construction phase and then takes into account the leakage, displacement and multiplier effects in order to assess the net effects on construction employment for the Norfolk and East of England economies.

Gross direct demolition and construction employment

17.9.45 The estimated construction period is approximately two years. The construction work is not permanent and therefore the effect will be temporary but medium-term in nature. The capital and revenue expenditure involved in the construction period will lead to increased output in Norfolk and the wider regional economy in East of England.

17.9.46 Applying an average gross output (**Ref 17.41**) per construction industry employee to the estimated total construction cost, as outlined in **Section 17.3**, it is therefore estimated that there are likely to be 628.9 FTE gross construction employees per annum for the Proposed Scheme during the construction phase.

Net additional construction employment

17.9.47 **Table 17-18** presents the temporary employment generated by the Proposed Scheme taking leakage, displacement and multiplier effects into account. The total net additional employment created within the Norfolk as a result of the Proposed Scheme is estimated to be 400 Full Time Equivalent (FTE) employees per annum, whilst 133 FTE jobs would be created in East of England, resulting in a total net



employment generation of 534 FTE jobs on average per annum during the construction period.

Table 17-18 – Construction employment generation per annum

Employment Generation	Norfolk	East of England	Total
Gross Direct Employment	471.6	157.2	628.9
Displacement	-235.8	-78.6	-314.4
Net Direct Employment	235.8	78.6	314.4
Net Indirect and Induced Employment	165.1	55.0	220.1
Total Net Employment	400.9	133.6	534.5

17.9.48 In the context of a large labour pool of construction workers in Norfolk (i.e. 19,000) and East of England (i.e. 259,000), the direct, indirect and induced employment, expenditure and upskilling created by the construction phase of the Proposed Scheme is likely to have a temporary **slight beneficial** (not significant) effect on the Norfolk economy, and **neutral** (not significant) effect on the East of England economy prior to the implementation of mitigation measures.

Mitigation / Enhancement

17.9.49 There are no mitigation measures required or proposed for Socio-economics in relation to construction employment generation. It is not considered appropriate for there to be any monitoring arrangements.



Residual Effects

17.9.50 Given there is no mitigation in relation to construction employment for Socio-economics, the pre-mitigation finding remains the same. Therefore, there is likely to be a direct, temporary, medium-term **slight beneficial** (not significant) residual effect on the Norfolk economy and **neutral** (not significant) residual effect on the East of England economy.

Gross Value Added (GVA)

17.9.51 The importance of sustaining the construction sector in the current economic climate should not be understated, and there are opportunities for local (Norfolk) and regional (East of England) economic benefits arising from the construction phase of the Proposed Scheme.

17.9.52 By applying an average benchmark of £64,750 GVA and £78,051 per construction employee in Norfolk and East of England respectively, it is anticipated that the estimated 400 FTE net construction jobs generated by the Proposed Scheme in Norfolk represent a net additional £25,900,000 GVA to the Norfolk economy. Whilst the estimated 133 FTE net jobs generated within the East of England represent a net additional £10,380,724 GVA to the East of England economy.

17.9.53 Therefore, there is likely to be a **slight beneficial** (not significant) effect on the Norfolk economy and a **neutral** (not significant) effect on the East of England economy from the construction of the Proposed Scheme.

Operational Phase

Operational Phase Embedded Mitigation

17.9.54 The following operational embedded mitigation has been identified for the Population and Human Health assessment.



- A Non-Motorised User Strategy has been developed and will be implemented in the immediate vicinity of the Proposed Scheme. These works consists of a network of new and enhanced PRow connecting up the existing fragmented and sparse existing PRow network around the Proposed Scheme and mitigating severance caused by the scheme with the provision of new green bridges and underpasses crossing the scheme which accessible to Non-Motorised Users. These will replace the existing routes which cross the Proposed Scheme's alignment and are outlined in the **Sustainable Transport Strategy** (Document reference: 4.02.00).
- **Chapter 7: Noise and Vibration** (Document Reference: 3.07.00), **Section 7.6** Assessment of Potential Effect, Mitigation and Residual Effects states that embedded mitigation has been proposed to reduce operational noise impact. This includes avoiding passing close to residential receptors where possible; inclusion of earthworks and acoustic barrier; and the use of low-noise road surfaces.
- **Chapter 9: Landscape and Visual Effects** (Document Reference: 3.09.00), **Section 9.7** Scheme Design and Mitigation details the measures included in the Scheme to minimise the impacts on visual amenity and assimilate the scheme into the existing landscape. Measures include new woodland and scrub planting, as well as areas of species rich seeding to enhance visual amenity.
- **Chapter 12: Road Drainage and the Water Environment** (Document Reference: 3.12.00), **Section 12.6** Assessment of potential effects, mitigation and residual effects included embedded mitigation for the operational assessment, primarily the implementation of a Surface Water Drainage Strategy.



- **Chapter 20: Traffic and Transport** (Document Reference: 3.20.00), **Section 19.14** Primary Mitigation described the Non-Motorised User Strategy which includes a network of new and enhanced PRow to link up the existing network around the Scheme.

Land Use: Private property and housing

17.9.55 Once operational, access to all residential properties identified (excluding PP1, PP4 and PP10 following their change of use) is not anticipated to be affected by the Proposed Scheme. Therefore, no change is anticipated during the operational phase.

Land Use: Community Land and Assets

17.9.56 None of the community land and assets, including Mid Norfolk Shooting Ground and Khora Yoga are anticipated to be directly or indirectly affected by the operational phase of the Proposed Scheme.

17.9.57 Access to community facilities within Weston Longville, Weston Green and Honingham is not anticipated to be permanently affected by the operational phase of the Proposed Scheme.

Land Use: Development Land and Businesses

17.9.58 Once operational, access to Mid Norfolk Shooting Ground and Khora Yoga are not anticipated to be affected by the Proposed Scheme. Therefore, no change compared to the baseline conditions is anticipated during the operational phase.

Land Use: Agricultural Land Holdings

17.9.59 As the permanent removal of land from agricultural use from land holdings within the Site Boundary would occur during the construction phase of the Proposed Scheme, there are no further effects on these holdings to report from the operation of the Proposed Scheme.

17.9.60 **Table 17-19** details the permanent effects on agricultural land parcels outside of the Site boundary, where additional environmental mitigation



for the Proposed Scheme is proposed. These effects will occur during the operation of the Proposed Scheme.

17.9.61 It should be noted that where land has been reported as permanently removed from agricultural use for the purposes of environmental mitigation, some of these areas will still be able to support agricultural use. Areas to be used for grassland creation and Water Framework Directive (WFD) mitigation will be able to be used for some grazing, as long as it is not intensive, and does not prohibit its functions for biodiversity and WFD mitigation. However, for the purposes of this assessment, a worst-case scenario has been presented, which assumes no agricultural function is possible.

Table 17-19 - Potential effect on agricultural land holdings during operation

Agricultural land holdings	Area Required for Proposed Scheme (temporary and permanent)	Sensitivity	Magnitude of change	Significance of effect
Environmental mitigation area	5.0ha would be required permanently for environmental mitigation. The proportion of the holding required permanently for environmental mitigation is 4%. No severance is anticipated.	Medium	Negligible	Permanent neutral effect (not significant)
Environmental mitigation area	3.0ha would be required permanently for environmental mitigation. The proportion of the holding required for environmental mitigation is 1%. No severance is anticipated.	Medium	Negligible	Permanent neutral effect (not significant)



Land Use: WCH

17.9.62 The Proposed Scheme is anticipated to result in permanent diversions of a few existing PRoW as shown in **Figure 17.2** (Document Reference: 3.17.02) and **Sub Appendix L: Non-Motorised User and Side Road Provision General Arrangement Layout** (Document Reference: 3.12.02I) The potential effects of permanent diversions of WCH routes, including new sections of PRoW, during operation is detailed in **Table 17-20**. The Proposed Scheme includes several new PRoW for which the health outcomes will be assessed separately in the human health assessment below. The NMU Strategy is shown in **Figure 17.2** (Document Reference: 3.17.02) and shows the WCH facilities that are proposed for the operational scheme.

Table 17-20 – Effect on users of WCH routes during operational phase

WCH route	Sensitivity	Impact on the route	Magnitude of impact	Significance of effect*
Attlebridge RB3	Medium	To remain at its current alignment.	No change	Permanent neutral effect (not significant)
Attlebridge RB4	Medium	To remain at its current alignment.	No change	Permanent neutral effect (not significant)
Ringland FP1	Medium	To remain at its current alignment.	No change	Permanent neutral effect (not significant)
Weston Longville FP9	Medium	The Footpath would be upgraded to a Restricted Byway (Route 8 on Figure 17.2) and accessible for pedestrians, cyclists, equestrians and non-motorised vehicles. The Restricted Byway is expected to remove severance as cyclists, equestrians and non-motorised vehicles currently have to travel along Marriott's Way circular (leisure route) or other minor roads and therefore take a longer route. It will remain at its current alignment.	Minor beneficial	Permanent slight beneficial effect (not significant)

WCH route	Sensitivity	Impact on the route	Magnitude of impact	Significance of effect*
Honingham FP5	Medium	<p>The Footpath would be upgraded to a Restricted Byway and accessible for pedestrians, cyclists, equestrians and non-motorised vehicles. The Restricted Byway is expected to remove severance as currently cyclists, equestrians and non-motorised vehicles have to travel along Marriott's Way circular (leisure route) or other minor roads and therefore take a longer route.</p> <p>It will remain at its current alignment.</p>	Minor beneficial	<p>*denotes where a range of level of effect is applicable in Table 3.8.1 in DMRB LA 104, and professional judgement has been applied to determine the significance of effect.</p> <p>Permanent slight beneficial effect (not significant)</p>

WCH route	Sensitivity	Impact on the route	Magnitude of impact	Significance of effect*
Honingham RB1	Medium	<p>The Restricted Byway would be stopped up permanently and would be diverted with an increase of length by approximately 2.71km.</p> <p>The revised route (represented by Route 2, 1a and 1b on Figure 17.2 (Document Reference: 3.17.02) would follow The Broadway (western section of the road would be a proposed Bridleway and eastern section of the road would be a proposed Restricted Byway) and travel across the Proposed Scheme towards the east. The route then travels south towards Honingham along the Proposed Scheme and crosses the A47 underpass.</p> <p>Although the diversion would provide a new and safe route for WCH when crossing the A47, the revised route would be over an additional 500m in length (resulting in a major magnitude of change according to the DMRB LA 112 Population and human health, Ref 17.1).</p>	Major adverse	Permanent moderate adverse effect (significant)
An unnamed cycleway	Medium	<p>The cycleway would be upgraded to a shared pedestrian and cycleway (represented by Route 11 on Figure 17.2).</p> <p>The route would be extended west towards the Attlebridge RB4, creating a safe and connected WCH route network north of the A1067 Fakenham.</p>	Minor beneficial	Permanent slight beneficial effect (not significant)

WCH route	Sensitivity	Impact on the route	Magnitude of impact	Significance of effect*
U57214 Breck Road	Medium	<p>Breck Road would be closed to all traffic except for access to land.</p> <p>The easternmost section of the road would be terminated and would be diverted with an increased length of approximately 640m.</p> <p>The route would be diverted onto the Broadway Green Bridge to maintain access for WCH.</p> <p>Although the diversion would provide a safe route for WCH when crossing the Proposed Scheme, the diversionary route would be over 500m in length.</p> <p>Represented by Route 3 on Figure 17.2.</p>	Major adverse	<p>*denotes where a range of level of effect is applicable in Table 3.8.1 in DMRB LA 104, and professional judgement has been applied to determine the significance of effect.</p> <p>Permanent moderate adverse effect (significant)</p>
U57217 Weston Road	Medium	<p>The centre section of the road would be stopped up and would be diverted with an increased length of approximately 750m.</p> <p>The route would be diverted onto the Morton Green Bridge to maintain access for WCH.</p> <p>Although the diversion would provide a safe route for WCH when crossing the Proposed Scheme, the diversionary route would be over 500m in length.</p> <p>Represented by Route 4 on Figure 17.2.</p>	Major adverse	Permanent moderate adverse effect (significant)
Ringland Lane	Medium	To remain at its current alignment.	No change	Permanent neutral effect (not significant)

WCH route	Sensitivity	Impact on the route	Magnitude of impact	Significance of effect*
U57323 Blackbreck Lane	Medium	<p>Northernmost section of the road would terminate and would be diverted with an increase of length by approximately 260m.</p> <p>The route would be diverted onto the Ringland Lane Underbridge to maintain access for WCH.</p> <p>Although the diversion would provide a safe route for WCH when crossing the Proposed Scheme, the diversion route would be over 250m. Represented by Route 5 on Figure 17.2.</p>	Moderate adverse	<p>*denotes where a range of level of effect is applicable in Table 3.8.1 in DMRB LA 104, and professional judgement has been applied to determine the significance of effect.</p> <p>Permanent moderate adverse effect (significant)</p>
New footpath	Medium	<p>The northern section of the Proposed Scheme would include a new footpath adjacent and following the northbound carriageway (represented by Route 10 and 10a in Figure 17.2).</p> <p>The proposed footpath would link Ringland Lane in the south to Attlebridge FP5 and Ringland FP2 in the north. Improved pedestrian access is anticipated.</p>	Minor to Moderate, dependant on route	Direct, permanent, long-term slight to moderate beneficial effect (not significant) on pedestrians in the local area.
New footpath	Medium	<p>The north-eastern section of the Proposed Scheme would provide a shared pedestrian/cycleway along one section of Marl Hill Road (also part of the existing Marriott's Way circular (leisure route)). Improved pedestrian access is anticipated.</p>	Minor to Moderate, dependant on route	Direct, permanent, long-term slight to moderate beneficial effect (not significant) on pedestrians in the local area.
U57216 Broadway / U57214 Telegraph Hill	Medium	<p>The Broadway and a section of Telegraph Hill is to be closed to all traffic, except cycles, and for access to adjacent land, creating a traffic free route for WCH. Represented by Route 2 on Figure 17.2.</p>	Minor	Direct, permanent, long-term slight beneficial effect (not significant) on pedestrians in the local area.

WCH route	Sensitivity	Impact on the route	Magnitude of impact	Significance of effect* <small>*denotes where a range of level of effect is applicable in Table 3.8.1 in DMRB LA 104, and professional judgement has been applied to determine the significance of effect.</small>
Attlebridge FP5, Weston Longville FP8, Attlebridge BR6, Ringland FP2 Ringland FP3, Ringland FP4 Weston Longville FP1, Weston Longville FP2, Weston Longville FP3, Weston Longville FP4, Weston Longville FP7 East Tuddenham FP1, East Tuddenham FP2, Honingham FP3, Morton-on-the-Hill BR1, Ringland FP5 and Ringland FP6, Marriott's Way circular (leisure route)	Medium	To remain at their current alignment.	No change	Permanent neutral effect (not significant)

Note: * denotes where a range of level of effect is applicable in Table 3.8.1 in DMRB LA 104, and professional judgement has been applied to determine the significance of effect.



17.9.63 The north-eastern section of the Proposed Scheme would provide a shared pedestrian/cycleway along one section of Marl Hill Road (also part of the existing Marriott's Way circular (leisure route)). Improved pedestrian access is anticipated, resulting in a direct, permanent, long-term **slight beneficial** effect on pedestrians in the local area.

Additional Mitigation

17.9.64 There is no mitigation required for the proposed new footpath.

Residual Effect

17.9.65 There is likely to be a direct, permanent, long-term **slight beneficial** (not significant) effect on users of Weston Longville FP9, Honingham FP5 and an unnamed cycleway.

17.9.66 There is likely to be a direct, permanent, long-term **moderate adverse** (significant) effect on users of Honingham RB1, Breck Road, Weston Road and Blackbreck Lane.

17.9.67 There is likely to be a direct, permanent, long-term **neutral** (not significant) effect on users of Attlebridge RB3, Attlebridge RB4, Ringland FP1, Marriott's Way circular (leisure route), Ringland Lane, Attlebridge FP5, Attlebridge BR6, Ringland FP2, Ringland FP3, Weston Longville FP1, Weston Longville FP2, Weston Longville FP3, East Tuddenham FP1, East Tuddenham FP2, Weston Longville FP8, Ringland FP4, Weston Longville FP4, Weston Longville FP7, Morton-on-the-Hill BR1, Ringland FP5, Ringland FP6 and Honingham FP3.

17.9.68 There is likely to be a direct, permanent, long-term **slight beneficial** (not significant) effect on pedestrians in the area due to the proposed new footpath along the northbound carriageway of the Proposed Scheme and a new shared pedestrian/cycleway along one section of Marl Hill Road.

Human Health

17.9.69 A proposed new active travel route, adjacent to the public highway, would lie near the northern section of the Proposed Scheme, linking the existing PRow network near Ringland and proposed new PRow towards the southern



section of the Proposed Scheme, and a new shared pedestrian/cycleway on one section of Marl Hill Road. The new linkage is anticipated to improve the connectivity for WCH in the area. The improved connectivity for WCH is expected to encourage greater use of the routes by local residents for recreational purposes, and enable opportunities for physical activity. In addition, Breck Road, Weston Road and Blackbreck Lane, which are currently used by WCH, would be closed to vehicular traffic, except for private access (i.e. landowner access) on Breck Road and Weston Road. There would be permanent diversion of four existing WCH routes (i.e. Honingham RB1, Breck Road, Weston Road, Blackbreck Lane) during the operational phase. This would provide a safe route for WCH to cross the Proposed Scheme and reduce the risk of traffic accidents occurring. However, the proposed permanent diversion would increase WCH journey length as stated in the WCH assessment above. The additional time required to travel on the four existing WCH routes could make PRow less accessible, or less appealing to use, particularly for some vulnerable users. **Chapter 9: Landscape and Visual Effects** (Document Reference: 3.09.00), **Section 9.8** Assessment of Potential Effects, Mitigation and Residual Effects states an adverse visual amenity change is anticipated on PRow during operation, which could also make the PRow less appealing to use as the Proposed Scheme would become visible to the PRow. As such, the changes to WCH experience during operation is likely to result in both **positive and negative** health outcomes associated with physical activity, accessibility and social cohesion.

17.9.70 Chapter 6: Air Quality (Document Reference: 3.06.00), **Section 6.6**

Assessment of Potential Effect, Mitigation and Residual Effects predicts that the annual mean NO₂, PM₁₀ and PM_{2.5} concentrations during operation of the Proposed Scheme on sensitive human receptors will be well below the standard. As such, **neutral** health outcomes associated with cardiovascular and respiratory diseases are anticipated during operational phase.

17.9.71 Chapter 7: Noise and Vibration (Document Reference: 3.07.00), **Section 7.6** Assessment of Potential Effect, Mitigation and Residual Effects identifies



both an increase and decrease in noise levels during operation when compared to the baseline conditions, where three residential receptors would have a reduced level of noise (significant beneficial effect); and 11 residential receptors would have an increased level of noise (significant adverse effect). As such, the changes to noise during operation is likely to result in both **positive and negative** health outcomes associated with mental health for these 15 residential receptors.

17.9.72 During the operational phase, a neutral (not significant) to moderate-large adverse (significant) visual effect on receptors at Year 1 has been identified in **Chapter 9: Landscape and Visual Effects** (Document Reference: 3.09.00), reducing to slight-moderate adverse (not significant) at Year 15 of operation for those receptors experiencing a significant effect at Year 1. Permanent changes to visual amenity are anticipated to become less unpleasant after a period of time (i.e. over 15 years) as landscaping, proposed as primary mitigation to include new woodland and scrub planting, as well as areas of species rich seeding, matures and residents adapt to the changes. The health outcomes associated with mental health as a result of the Proposed Scheme for local residents is therefore **negative to neutral**.

17.9.73 **Chapter 12: Road Drainage and the Water Environment** (Document Reference: 3.12.00) has identified a temporary minor adverse effect (not significant) on flood risk receptors prior to mitigation. However, as detailed in **Appendix 12.2 Flood Risk Assessment** (Document Reference: 3.12.02), it is primarily grazing farmland that will be affected, and flood levels for the identified wedding venue (the Keeper and the Dell) are anticipated to be reduced. Therefore, **neutral to positive** health outcomes associated with stress and anxiety are expected.

17.9.74 Permanent, negligible beneficial/adverse effects have been identified for fear and intimidation in **Chapter 19: Traffic and Transport** (Document Reference: 3.19.00) during operation for all assessed scenarios. As such, **neutral** health outcomes associated with mental health (e.g. fear and intimidation) are anticipated.



Additional Mitigation

17.9.75 There is no specific additional mitigation proposed for human health.

Residual Effect

17.9.76 There are likely to be both **positive and negative** health outcomes related to physical activity, accessibility and active travel.

17.9.77 There are likely to be **neutral** health outcomes associated with cardiovascular and respiratory diseases.

17.9.78 Although embedded mitigation measures have been proposed to reduce operational noise impact, both beneficial and adverse change in noise level would remain. Therefore, both **positive and negative** health outcomes associated with mental health related to noise remains.

17.9.79 There is likely to be a **negative to neutral** health outcome associated with mental health resulting from changes to visual amenity.

17.9.80 It is expected that there will be **neutral to positive** health outcomes associated with stress and anxiety resulting from the risk of flooding.

17.9.81 Neutral health outcomes associated with mental health are anticipated in relation to fear and intimidation associated with traffic.

17.10 Cumulative Effects

17.10.1 Cumulative effects for Population and Human Health have been assessed within **Chapter 20: Cumulative Effects** (Document Reference: 3.20.00). In-combination effects are described in **Appendix 17.1: In-combination assessment** (Document Reference: 3.17.01).

17.11 Opportunities for Environmental Enhancement

17.11.1 No specific enhancement measures have been identified for Population and Human Health.



17.12 Summary

17.12.1 **Table 17-21** and **Table 17-22** provides a summary of the findings of the Population and human health assessment.

Key to table:

P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term (one year), Medium Term (one to five years) or Long Term (over five years), N/A = Not Applicable

Table 17-21 – Construction Phase

Receptor	Potential Effects	Additional Mitigation	Residual Effects	Monitoring
Private property and housing – Residential properties (PP1, PP4 and PP10)	Land take Moderate Adverse (significant) P / D / LT	None proposed	Moderate Adverse (significant) P / D / LT	None required or proposed
Private property and housing - 11 properties located off A1270 Broadland Northway, A1067 Fakenham Road, off The Street, Ringland Lane and on Weston Road	Access / Severance Moderate Adverse (significant) T / D / MT	Access will remain open, where practicable along their current alignments. Alternative access will be provided if current access is inhibited. Discussion will be undertaken between the affected parties and Contractor prior to commencement of work to agree on the alignment of alternative access. These measures have been included within the OCEMP (Document Reference: 3.03.01) to ensure the implementation of the proposed measures.	Slight Adverse (not significant) T / D / MT	None required or proposed
Community land and assets - Mid Norfolk Shooting Ground and Khora Yoga	Access / Severance Moderate Adverse (significant) T / D / MT	Access will remain open, where practicable along their current alignments. Alternative access will be provided if inhibited. Discussion will be undertaken between the affected party and Contractor prior to commencement of work to agree on the alignment of alternative access. Local communities will be notified of any route diversions prior to commencement of construction. These measures have been included within the OCEMP to ensure the implementation of the proposed measures.	Slight Adverse (not significant) T / D / MT	None required or proposed

Receptor	Potential Effects	Additional Mitigation	Residual Effects	Monitoring
Community land and assets - Severance between residents and community land and assets in Weston Longville	Access / Severance Large Adverse (significant) T / D / MT	Access will remain open, where practicable along their current alignments. Alternative access will be provided if inhibited. Discussion will be undertaken between the affected party and Contractor prior to commencement of work to agree on the alignment of alternative access. Local communities will be notified of any route diversions prior to commencement of construction. These measures have been included within the OCEMP to ensure the implementation of the proposed measures.	Moderate Adverse (significant) T / D / MT	None required or proposed
Community land and assets - other community land and assets including open spaces and golf clubs which fall within the 500m Study Area	No effects identified.	None proposed.	Not applicable	None required.
Community land and assets - Weston Green, Honingham, Ringland and Attlebridge	No effects identified.	None proposed.	Not applicable	None required.

Receptor	Potential Effects	Additional Mitigation	Residual Effects	Monitoring
Development land and business - Business of Mid Norfolk Shooting Ground	Business viability Very Large Adverse (significant) T / D / MT	<p>Access will remain open, where practicable along their current alignments. Alternative access will be provided if inhibited.</p> <p>Discussion will be undertaken between the affected party and Contractor prior to commencement of work to agree on the alignment of alternative access.</p> <p>Should alternative access be required during construction, access measures regarding temporary supervised traffic control to the business premise would be added to the Construction Traffic Management Plan.</p> <p>These measures have been included within the OCEMP to ensure the implementation of the proposed measures.</p>	Moderate Adverse (significant) T / D / MT	None required or proposed
Development land and business - Business of Khora Yoga	Business viability Moderate Adverse (significant) T / D / MT	<p>Access will remain open, where practicable along their current alignments. Alternative access will be provided if inhibited.</p> <p>Discussion will be undertaken between the affected party and Contractor prior to commencement of work to agree on the alignment of alternative access.</p> <p>Should alternative access be required during construction, access measures regarding temporary supervised traffic control to the business premise would be added to the Construction Traffic Management Plan.</p> <p>These measures have been included within the OCEMP to ensure the implementation of the proposed measures.</p>	Slight Adverse (not significant) T / D / MT	None required or proposed

Receptor	Potential Effects	Additional Mitigation	Residual Effects	Monitoring
Agricultural Land Holdings - Three Agricultural Land Holdings (9 and 10, 14 and 32)	Land take / Severance Large Adverse (significant) P & T / D / MT	None proposed.	Large Adverse (significant) P & T / D / MT	None required or proposed
Agricultural Land Holdings – Four Agricultural Land Holdings (1, 7, 18 and 45)	Land take / Severance Moderate Adverse (significant) P & T / D / MT	None proposed.	Moderate Adverse (significant) P & T / D / MT	None required or proposed
Agricultural Land Holdings - Four Agricultural Land Holdings (12, 17, 19 and 44)	Land take / Severance Slight Adverse (not significant) P & T / D / MT	None proposed.	Slight Adverse (not significant) P & T / D / MT	None required or proposed
Agricultural Land Holding - Marl Hill Road/Morton Lane	Land take / Severance Neutral (not significant) P / D / MT	None proposed.	Neutral (not significant) P & T / D / MT	None required or proposed
WCH - Attlebridge RB3	Access / Severance Slight Adverse (not significant) T / D / MT	None proposed. No temporary replacement route is proposed to divert the existing WCH routes, however alternative routes will be advertised.	Slight Adverse (not significant) T / D / MT	None required or proposed

Receptor	Potential Effects	Additional Mitigation	Residual Effects	Monitoring
WCH - Attlebridge RB4, Ringland FP1, Weston Longville FP9, Honingham FP5, Honingham RB1, Weston Longville FP1, Westorn Longville FP7, Ringland FP2, Ringland FP3, Attlebridge FP5, an unnamed cycleway, Breck Road, Weston Road, Ringland Lane, Blackbreck Lane	Access / Severance Moderate Adverse (significant) T / D / MT	None proposed. No temporary replacement route is proposed to divert the existing WCH routes, however alternative routes will be advertised.	Moderate Adverse (significant) T / D / MT	None required or proposed
WCH - Ringland FP4, Attlebridge BR6, Weston Longville FP2, Weston Longville FP3, Weston Longville FP4, East Tuddenham FP1, East Tuddenham FP2 and Honingham FP3, Morton-on-the-Hill BR1, Ringland FP5 and Ringland FP6	Access / Severance Neutral (not significant) T / D / MT	None proposed	Neutral (not significant) T / D / MT	None required or proposed

Receptor	Potential Effects	Additional Mitigation	Residual Effects	Monitoring
WCH - Marriott's Way circular (leisure route)	<p>Access / Severance</p> <p>Slight Adverse (not significant)</p> <p>T / D / MT</p>	<p>To be diverted away from the Red Line Boundary during construction and reconnect to the rest of the cycleway where possible.</p> <p>The diversionary route will incorporate good practice with regards to safety, and seek to maintain the same standards of accessibility for users.</p> <p>A TTRO will be applied for, for this diversion and Public Information Notices shared in advance.</p> <p>These measures have been included within the OCEMP to ensure the implementation of the proposed measures.</p>	<p>Slight Adverse (not significant)</p> <p>T / D / MT</p>	None required or proposed
Human health - Population in Great Witchingham, Mattishall, Taverham North, Taverham South and Upper Wensum	<p>Reduced physical activity, accessibility and social cohesion.</p> <p>Negative</p> <p>T / D / MT</p>	<p>Diversionary route of Marriott's Way circular (leisure route) will incorporate good practice with regards to safety, and seek to maintain the same standards of accessibility for users.</p> <p>No further mitigation beyond what is outlined within Chapter 9: Landscape and Visual Effects.</p>	<p>Negative</p> <p>T / D / MT</p>	None required or proposed
Human health - Population in Great Witchingham, Mattishall, Taverham North, Taverham South and Upper Wensum	<p>Increased level of construction dust exacerbating respiratory and cardiovascular diseases</p> <p>Negative</p> <p>T / D / MT</p>	<p>Construction dust mitigation measures have been detailed in the OCEMP and will be implemented.</p>	<p>Neutral</p> <p>T / D / MT</p>	None required or proposed

Receptor	Potential Effects	Additional Mitigation	Residual Effects	Monitoring
Human health - Population in Great Witchingham, Mattishall, Taverham North, Taverham South and Upper Wensum	Mental health influenced by increased level of noise Negative T / D / MT	None proposed.	Negative T / D / MT	None required or proposed
Human health - Population in Great Witchingham, Mattishall, Taverham North, Taverham South and Upper Wensum	Mental health influenced by changes to visual amenity for local residents Negative T / D / MT	No further mitigation beyond what is outlined within Chapter 9: Landscape and Visual Effects.	Negative T / D / MT	None required or proposed
Human health - Population in Great Witchingham, Mattishall, Taverham North, Taverham South and Upper Wensum	Mental health influenced by increased flood risk Neutral T / D / MT	None proposed	Neutral T / D / MT	None required or proposed
Human health - Population in Great Witchingham, Mattishall, Taverham North, Taverham South and Upper Wensum	Mental health influenced by fear and intimidation from road traffic. Neutral T / D / MT	Construction vehicles and movements would be managed with the CTMP and Construction Workers Travel Plan.	Neutral T / D / MT	None required or proposed

Receptor	Potential Effects	Additional Mitigation	Residual Effects	Monitoring
Human health - Population in Great Witchingham, Mattishall, Taverham North, Taverham South and Upper Wensum	Mental health influenced by increased employment opportunities. Positive T / D / MT	None proposed.	Positive T / D / MT	None required or proposed
Socio-economic - Norfolk economy	Estimated FTE net construction job generation and additional GVA in Norfolk. Slight Beneficial (not significant) T / D / MT	None proposed.	Slight Beneficial (not significant) T / D / MT	None required or proposed
Socio-economic - East of England economy	Estimated FTE net construction job generation and additional GVA in East of England. Neutral T / D / MT	None proposed.	Neutral T / D / MT	None required or proposed

Table 17-22 – Operational Phase

Receptor	Potential Effects	Additional Mitigation	Residual Effects	Monitoring
Private Property and housing	No effects identified.	None proposed.	Not applicable.	None required.
Community land and assets	No effects identified.	None proposed.	Not applicable.	None required.

Receptor	Potential Effects	Additional Mitigation	Residual Effects	Monitoring
Development land and businesses	No effects identified.	None proposed.	Not applicable.	None required.
Agricultural Land Holdings - Three Agricultural Land Holdings (9 and 10, 14 and 32)	Land take / Severance Large Adverse (significant) P / D / MT	None proposed.	Large Adverse (significant) P / D / MT	None proposed.
Agricultural Land Holdings - Four Agricultural Land Holdings (1, 7, 18 and 45)	Land take / Severance Moderate Adverse (significant) P / D / MT	None proposed.	Moderate Adverse (significant) P / D / MT	None required or proposed
Agricultural Land Holdings - Four Agricultural Land Holdings (12, 17, 19 and 44)	Land take / Severance Slight Adverse (not significant) P / D / MT	None proposed.	Slight Adverse (not significant) P / D / MT	None required or proposed
Agricultural Land Holdings - Agricultural Land Holdings associated with the environmental mitigation area and Marl Hill Road/Morton Lane	Land take / Severance Neutral (not significant) P / D / MT	None proposed.	Neutral (not significant) P / D / MT	None required or proposed
WCH - Weston Longville FP9, Honingham FP5 and an unnamed cycleway	Improved access Slight Beneficial (not significant) P / D / LT	None proposed.	Slight Beneficial (not significant) P / D / LT	None required or proposed

Receptor	Potential Effects	Additional Mitigation	Residual Effects	Monitoring
WCH – Honingham RB1, Breck Road, Weston Road and Blackbreck Lane	Access / severance Moderate Adverse (significant) P / D / LT	None proposed.	Moderate Adverse (significant) P / D / LT	None required or proposed
WCH - Attlebridge RB3, Attlebridge RB4, Ringland FP1, Ringland FP2, Ringland FP3, Weston Longville FP1, Weston Longville FP7, Marriott's Way circular (leisure route), Ringland Lane, Attlebridge FP5, Weston Longville FP8, Attlebridge BR6, Ringland FP2, Ringland FP3, Weston Longville FP2, Weston Longville FP3, Weston Longville FP4, East Tuddenham FP1, East Tuddenham FP2, Honingham FP3, Morton-on-the-Hill BR1, Ringland FP5 and Ringland FP6	Access / severance Neutral (not significant) P / D / LT	None proposed.	Neutral (not significant) P / D / LT	None required or proposed

Receptor	Potential Effects	Additional Mitigation	Residual Effects	Monitoring
WCH - The Broadway / Telegraph Hill	Improved WCH access due to traffic restrictions / downgrading to a Restricted Byway. Slight Beneficial (not significant) P / D / LT	None proposed.	Slight Beneficial (not significant) P / D / LT	None required or proposed
WCH – Pedestrians in the local area	Improved access due to new sections of PRow and a new shared pedestrian/cycleway Slight / Moderate Beneficial (not significant / significant) – depending on route taken P / D / LT	None proposed.	Slight / Moderate Beneficial (not significant / significant) – depending on route taken P / D / LT	None required or proposed
Human health - Population in Great Witchingham, Mattishall, Taverham North, Taverham South and Upper Wensum	Physical activity, accessibility and social cohesion Positive and negative P / D / LT	No further mitigation beyond what is outlined within Chapter 9: Landscape and Visual Effects.	Positive and negative P / D / LT	None required or proposed
Human health - Population in Great Witchingham, Mattishall, Taverham North, Taverham South and Upper Wensum	Cardiovascular and respiratory diseases influenced by air quality Neutral P / D / LT	No further mitigation beyond what is outlined within Chapter 6: Air Quality.	Neutral P / D / LT	None required or proposed

Receptor	Potential Effects	Additional Mitigation	Residual Effects	Monitoring
Human health - Population in Great Witchingham, Mattishall, Taverham North, Taverham South and Upper Wensum	Mental health influenced by increased level of noise Positive and negative P / D / LT	No further mitigation beyond what is outlined within Chapter 7: Noise and Vibration.	Positive and negative P / D / LT	None required or proposed
Human health - Population in Great Witchingham, Mattishall, Taverham North, Taverham South and Upper Wensum	Mental health influenced by visual amenity Negative to Neutral P / D / LT	No further mitigation beyond what is outlined within Chapter 9: Landscape and Visual Effects.	Negative to Neutral P / D / LT	None required or proposed
Human health - Population in Great Witchingham, Mattishall, Taverham North, Taverham South and Upper Wensum	Mental health influenced by increased flood risk Neutral to Beneficial P / D / MT	None proposed.	Neutral to Beneficial P / D / MT	None required or proposed
Human health - Population in Great Witchingham, Mattishall, Taverham North, Taverham South and Upper Wensum	Mental health influenced by fear and intimidation by road traffic. Negative P / D / LT	None proposed.	Negative P / D / LT	None required or proposed



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