



West Winch Housing Access Road

Environmental Statement – Chapter 15 Population and Human Health

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Glossary of Abbreviations and Defined Terms

Abbreviations

Abbreviation	Description
ES	Environmental Statement
CRoW	Countryside Rights of Way
NPPF	National Planning Policy Framework
BKLWN	Borough of King's Lynn and West Norfolk
IEMA	Institute for Environmental Management and Assessment
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
PRoW	Public Rights of Way
WCH	Walkers, cyclists and horse riders
CWS	County Wildlife Sites
LSOA	Lower Super Output Area

Glossary

Item	Description
Construction Environmental Management Plan (CEMP)	Document setting out methods to avoid, minimise and mitigate environmental impacts on the environment and surrounding area. The protocols to be followed in implementing these measures in accordance with environmental commitments during construction.



1 Population and Human Health

1.1 Introduction

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

1.1.2 This chapter (and its associated figures and appendices) is intended to be read as part of the wider Environmental Statement (ES), with particular reference to **Chapter 6 Air Quality**, **Chapter 9: Landscape and Visual**, **Chapter 10 Noise and Vibration**, and **Chapter 16 Traffic and Transport**.

1.1.3 **Appendix 15.1** accompanies this chapter and outlines legislation and planning policy at a national and local level of relevance to the Proposed Scheme and Population and Human Health.

1.2 Legislative framework, Policy and Guidance

Legislative Framework

1.2.1 The applicable legislative framework is summarised as follows (full details are outlined in **Appendix 15.1**):

- Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (**Ref. 15.1**)
- Countryside Rights of Way (CRoW) Act 2000 (**Ref. 15.2**)

Policy

- National Planning Policy Framework (NPPF) 2023 (**Ref. 15.3**)
- Borough Council of Kings Lynn and West Norfolk (BKLWN) Local Development Plan (**Ref. 15.4**)
- West Winch Growth Area Strategic Policy (**Ref. 15.5**)

1.2.2 In addition, this chapter has been prepared in accordance with the Government's National Planning Practice Guidance (**Ref. 15.6**).



Guidance

1.2.3 The following guidance documents have been used during the preparation of this chapter (full details are outlined in **Appendix 15.1**):

- The principles of Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 LA 112 Population and human health (formerly DMRB Volume 11, Section 3, Part 6 (Land), Volume 11, Section 3, Part 8 (Pedestrians, cyclists, equestrians and community effects) and Volume 11, Section 3, Part 9 (Vehicle travellers)) have been used during the preparation of this chapter (**Ref. 15.7**);
- DMRB LA 104 Environmental assessment and monitoring (**Ref. 15.8**); and
- Institute for Environmental Management and Assessment (IEMA) Determining Significance for Human Health in Environmental Impact Assessment (**Ref. 15.9**).

1.3 Consultation, Scope, Methodology and Significance Criteria

Scope of the Assessment

1.3.1 The scope of this assessment has been established through an ongoing scoping process. Further information can be found in **Chapter 5: Approach to EIA**. This section provides an update to the scope of the assessment and updates the evidence base for scoping in or out elements following further iterative assessment.

1.3.2 In March 2021, a Scoping Report was issued to Kings Lynn and West Norfolk County Council (as outlined in Appendix 1.1). The Council confirmed within the Scoping Opinion issued in May 2021 (Appendix 1.2) that they agreed with the likely significant environmental effects as outlined in the EIA Scoping Report (Appendix 1.1) and requested consideration of both common and open access land as part of the Community Land and Assets assessment.



1.3.3 The scope outlined below clarifies and updates the scope of this assessment in line with LA 112 guidance, in the context of the Scoping Opinion received from the Council.

Elements scoped out of the assessment

1.3.4 The elements shown in **Table 1-1** are considered unlikely to give rise to significant effects as a result of the Proposed Scheme and have therefore not been considered within this ES:

Table 1-1 Elements scoped out of the assessment

Element scoped out	Justification
Agricultural land holdings (construction and operation)	The Council and their legal advisors are currently undertaking liaison with those who own/lease agricultural land holdings within the Proposed Scheme boundary. The Scoping Opinion confirmed that statutory consultees did not raise any concern with the Applicant’s proposal in this regard. As such, any further assessment is scoped out of the Population and Human Health assessment.

Elements scoped into the assessment

1.3.5 The likely significant effects which were scoped in for assessment within the ES are outlined below. The categorisation of these effects reflects LA 112 guidance, and therefore the terminology used in the Environmental Scoping Report varies slightly in some places.

Construction Phase

- Private property and housing;
- Community land and assets;



- Development land and businesses;
- Walkers, cyclists and horse-riders; and
- Human health.

Operation Phase

1.3.6 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;
- Walkers, cyclists and horse-riders; and
- Human health.

Consultation Undertaken to Date

1.3.7 With the exception of the EIA Scoping Report, no further consultation has been undertaken with the BKLWN Council or other statutory agencies; this was not considered necessary for the preparation of this chapter.

Extent of the Study Area

1.3.8 The DMRB LA112 guidance advises a study area of 500m surrounding a project boundary for the land use and accessibility (non-human health) elements of an assessment, unless other study areas are considered to be more appropriate for a particular receptor.

1.3.9 As part of the scoping of the Proposed Scheme, a 1km study area from the Proposed Scheme Boundary was referred to within the 2021 Scoping Report, as well as the 500m study area within LA 112 guidance. Given both are referred to within the 2021 Scoping Report, there is a lack of clarity regarding the study area proposed at the time of writing; however, the Council notes that



“the Public Right of Way team agree that the 1km extent of the study area for the effects of the scheme on (walkers, cyclists and horse riders) is appropriate”.

1.3.10 As such, a 1km study area has been used for the purposes of this assessment, however it is considered there is the greatest likelihood of receptors being affected by the Proposed Scheme the closer they are located to the red line boundary.

1.3.11 Whilst there is no specifically defined study area for human health, the Institute of Environmental Management and Assessment (IEMA) guidance on ‘Effective Scoping of Human Health in Environmental Impact Assessment’ notes that health effects vary between geographical areas and that the geographical scope for health assessment should consider *“where there are likely and potentially significant site and local area effects...and focus on areas where the project would exert most influence”* (Ref. 15.10). In line with this, the study area within and surrounding the Proposed Scheme focuses primarily on the approximately 1km study area applied for Land Use and Accessibility receptors. The study areas for effects associated with Air Quality, Landscape and Visual, and Noise and Vibration are described in Chapters 6, 9 and 10 of this ES respectively.

Method of Baseline Data Collation

Desktop Baseline Data Collection

1.3.12 Data has been collated from various online sources including:

- Google Maps (Ref. 15.11);
- Bing Maps (Ref. 15.12);
- MAGIC (Ref. 15.13);
- Office of National Statistics Labour Market Statistics Report (NOMIS) (Ref. 15.14);
- Public Health Profiles (Ref. 15.15); and



- English indices of deprivation (**Ref. 15.16**).

1.3.13 The Hardwick Green ES (Hardwick Green, North Runcton, King's Lynn, Updated ES, Volume 1 Main Report, June 2016) has also been referred to due to its close proximity to the Proposed Scheme. This has been produced for the 4,000 dwelling residential development off Harwick Interchange which connects to the Proposed Scheme.

Site Visit and Surveys

1.3.14 No site visits or surveys have been undertaken to inform the Population and Human Health assessment.

Assessment Methodology

1.3.15 The methodology for this Population and Human Health assessment has been defined using DMRB LA112 guidance (**Ref. 15.7**) and IEMA guidance on 'Determining Significance for Human Health in Environmental Impact Assessment' (**Ref. 15.9**). In addition, the assessment is guided by the Government's planning policy and guidance particularly the NPPF (**Ref. 15.3**) and KLWN's Local Development Plan (**Ref. 15.4**) as detailed in **Appendix 15.1** as well as past experience and professional judgement.

1.3.16 In line with DMRB guidance, the assessment covers construction and operational effects categorised as either: Land Use and Accessibility or Human Health. Further details on the methodologies of each aspect of the assessment have been detailed below.

Land Use and Accessibility

- **Private property and housing:**
 - Private residential properties and housing land allocations that fall inside the Proposed Scheme Boundary, those which have a direct means of access within the Proposed Scheme boundary, or which lie within the 1km study area of the Proposed Scheme boundary.



- The assessment will identify disruption to access, likely severance, and the extent and numbers of dwellings lost as a result of the Proposed Scheme. The likely effects on housing land allocations will also be assessed.
- **Community land and assets:**
 - Community and recreational land (e.g. common land, parks and open spaces) and community facilities (e.g. schools, places of worship) that fall inside the Proposed Scheme boundary (the Proposed Scheme Boundary), those which have a direct means of access within the Proposed Scheme boundary, or which lie within the 1km study area of the Proposed Scheme boundary.
 - The assessment will identify (where possible and relevant) the level of use of community land and assets. The impacts on the public will be set out in terms of accessibility restrictions / severance, changes to amenity, and the extent of any community land and assets lost as a result of the Proposed Scheme
- **Development land and businesses:**
 - Businesses and employment land allocations that fall inside the Proposed Scheme boundary (the Proposed Scheme Boundary), those which have a direct means of access within the Proposed Scheme boundary, or which lie within the 1km study area of the Proposed Scheme boundary.
 - The assessment will identify the disruption to access, likely severance, changes to amenity, and the extent and numbers of businesses lost as a result of the Proposed Scheme. The likely effects on employment land allocations will also be assessed.
- **Walkers, Cyclists and Horse Riders:**



- Public Rights of Way (PRoW) and non-designated routes for walkers, cyclists, and horse riders (WCH) that fall inside the Proposed Scheme boundary (the Proposed Scheme Boundary), those which have a direct means of access within the Proposed Scheme boundary, or which lie within the 1km study area of the Proposed Scheme boundary.
- The assessment will identify (where possible and relevant) the level of use, and the impact on WCH receptors according accessibility restrictions / severance resulting in changes to journey length and changes to amenity.

Human health

1.3.17 A qualitative assessment will be undertaken to determine effects of the Proposed Scheme on human health. Changes to health determinants as a result of the Proposed Scheme will be identified using appropriate information from other environmental topics within the ES (including **Chapter 6 Air Quality, Chapter 9 Landscape and Visual, Chapter 10 Noise and Vibration, and Chapter 16 Traffic and Transport**) and any other available information regarding health.

1.3.18 Relevant health determinants which have the potential to be affected by the Proposed Scheme and therefore included in the assessment of Human Health include:

- Health related behaviours – physical activity;
- Social environment – housing, open space, transport connections;
- Economic environment – education, employment and income;
- Bio-physical environment - air quality; noise; visual amenity;
- Institutional and built environment – access to health and social care, the built environment and wider social infrastructure.



1.3.19 The study area within and surrounding the Proposed Scheme focuses on the approximately 1km study area for Land Use and Accessibility receptors. It should be noted that the Air Quality, Landscape and Visual, Noise and Vibration, and Transport assessments apply their own (differing) study areas for the assessment of effects, however the human health assessment will only consider the assessment results within these topic chapters for relevant receptors within a 1km study area.

1.3.20 Data for the human health baseline will be collected for the Lower Super Output Areas (LSOA) within which the Proposed Scheme study area falls: King's Lynn and West Norfolk 14D; 14E; 11D; and 11F. The baseline for Human Health also considers KLWN, and Norfolk as a whole, to provide context and comparison at the local authority and county level.

Significance Criteria and Sensitivity

Land Use and Accessibility

1.3.21 The assessment of likely significant environmental effects as a result of the Proposed Scheme has taken into account both the construction and operational phases. The significance level attributed to each effect has been assigned based on the magnitude of change due to the Proposed Scheme and the sensitivity of the affected receptor.

1.3.22 For Land Use and Accessibility, there is no accepted definition of what constitutes a significant or not significant effect. As such, based on professional judgement, effects will be assessed on the basis of:

- Consideration of sensitivity of receptors and their ability to respond to change;
- Scope for adjustment or mitigation;
- Magnitude of impact: This entails consideration of the size of the impact on receptors in the context of the area in which the effects will be experienced;



- Duration: This entails consideration of the duration of impact as either short, medium or long term. Impacts lasting less than a year are considered short term, impacts lasting between one and five years are considered medium term and impacts lasting five or more years are considered long term.
- Permanence: This involves identifying whether the impact will be permanent or temporary. Generally, impacts during the construction phase of the Proposed Scheme are considered temporary, and impacts during the operational phase of the Proposed Scheme are considered permanent.

1.3.23 For Land use and Accessibility, sensitivity criteria will be assigned according to Table 3.11 in the DMRB LA112 (**Ref. 15.7**). This categorises a receptors' sensitivity as: very high; high; medium; low; and negligible. This has been outlined in Table 1-2 below.



Table 1-2 Sensitivity of Receptors (LA 112 Table 3.11)

Sensitivity	Receptor
Very High	<p>Private Property and Housing:</p> <ul style="list-style-type: none"> ▪ Existing housing and land allocated for housing covering >5ha / >150 houses <p>Community Land and Assets (where there is a combination of the following):</p> <ul style="list-style-type: none"> ▪ Complete severance between communities and their land/assets, with little/no accessibility provision; ▪ Alternatives are only available outside the local planning authority area; ▪ The level of use is very frequent (daily); and ▪ The land and assets are used by the majority (>=50%) of the community. <p>Development Land and Businesses:</p> <ul style="list-style-type: none"> ▪ Existing employment sites (excluding agriculture) and land allocated for employment (e.g. strategic employment sites) covering >5ha. <p>Walkers, Cyclists and Horse Riders:</p> <ul style="list-style-type: none"> ▪ National trails and routes likely to be used for both commuting and recreation that record frequent (daily) use. Such routes connect communities with employment land uses and other services with a direct and convenient WCH route. Little / no potential for substitution; ▪ Routes regularly used by vulnerable travellers such as the elderly, school children and people with disabilities, who could be disproportionately affected by small changes in the baseline due to potentially different needs; and ▪ Rights of way for WCH crossing roads at grade with >16,000 vehicles per day.



Sensitivity	Receptor
High	<p data-bbox="507 369 938 405">Private Property and Housing:</p> <ul data-bbox="507 421 1358 501" style="list-style-type: none"><li data-bbox="507 421 1358 501">■ Existing housing and land allocated for housing covering >1-5ha / >30 -150 houses. <p data-bbox="507 528 1382 609">Community Land and Assets (where there is a combination of the following):</p> <ul data-bbox="507 629 1382 965" style="list-style-type: none"><li data-bbox="507 629 1382 710">■ There is substantial severance between community and assets, with limited accessibility provision;<li data-bbox="507 730 1382 810">■ Alternative facilities are only available in the wider local planning authority area;<li data-bbox="507 831 1382 866">■ The level of use is frequent (weekly); and<li data-bbox="507 887 1382 965">■ The land and assets are used by the majority (>=50%) of the community. <p data-bbox="507 985 1018 1021">Development Land and Businesses:</p> <ul data-bbox="507 1037 1326 1167" style="list-style-type: none"><li data-bbox="507 1037 1326 1167">■ Existing employment sites (excluding agriculture) and land allocated for employment (e.g. strategic employment sites) covering >1 - 5ha. <p data-bbox="507 1193 1018 1229">Walkers, Cyclists and Horse Riders:</p> <ul data-bbox="507 1245 1366 1536" style="list-style-type: none"><li data-bbox="507 1245 1366 1424">■ Regional trails and routes (e.g. promoted circular walks) likely to be used for recreation and to a lesser extent commuting, that record frequent (daily) use. Limited potential for substitution; and/or<li data-bbox="507 1451 1366 1536">■ Rights of way for WCH crossing roads at grade with >8,000 - 16,000 vehicles per day.



Sensitivity	Receptor
Medium	<p>Private Property and Housing:</p> <ul style="list-style-type: none"> ▪ Existing housing and land allocated for housing covering <1ha / <30 houses. <p>Community Land and Assets (where there is a combination of the following):</p> <ul style="list-style-type: none"> ▪ There is severance between communities and their land/assets but with existing accessibility provision; ▪ Limited alternative facilities are available at a local level within adjacent communities; ▪ The level of use is reasonably frequent (monthly); and ▪ The land and assets are used by the majority (>=50%) of the community. <p>Development Land and Businesses:</p> <ul style="list-style-type: none"> ▪ Existing employment sites (excluding agriculture) and land allocated for employment (e.g. strategic employment sites) covering >1 - 5ha. <p>Walkers, Cyclists and Horse Riders:</p> <ul style="list-style-type: none"> ▪ Regional trails and routes (e.g. promoted circular walks) likely to be used for recreation and to a lesser extent commuting, that record frequent (daily) use. Limited potential for substitution; and/or ▪ Rights of way for WCH crossing roads at grade with >8,000 - 16,000 vehicles per day.



Sensitivity	Receptor
Low	<p>Private Property and Housing:</p> <ul style="list-style-type: none"> ▪ Proposed development on unallocated sites providing housing with planning permission/in the planning process. <p>Community Land and Assets (where there is a combination of the following):</p> <ul style="list-style-type: none"> ▪ Limited existing severance between community and assets, with existing full Disability Discrimination Act 1995 compliant accessibility provision; ▪ Alternative facilities are available at a local level within the wider community; ▪ The level of use is infrequent (monthly or less frequent); and ▪ The land and assets are used by the minority (>=50%) of the community. <p>Development Land and Businesses:</p> <ul style="list-style-type: none"> ▪ Proposed development on unallocated sites providing employment with planning permission/in the planning process. <p>Walkers, Cyclists and Horse Riders:</p> <ul style="list-style-type: none"> ▪ Routes which have fallen into disuse through past severance, or which are scarcely used because they do not currently offer a meaningful route for either utility or recreational purposes, and/or; ▪ Rights of way for WCH crossing roads at grade with <4,000 - 16,000 vehicles per day.



Sensitivity	Receptor
Negligible	<p>Private property and housing: Not applicable.</p> <p>Community Land and Assets:</p> <ul style="list-style-type: none"> ■ No or limited severance or accessibility issues; ■ Alternative facilities are available within the same community; ■ The level of use is very infrequent (a few occasions yearly); and ■ The land and assets are used by the minority (>=50%) of the community. <p>Development land and businesses: Not applicable.</p> <p>Walkers, Cyclists and Horse Riders: Not applicable.</p>

NOTE 1 Private property and housing: a higher sensitivity value can be allocated where private property or housing provision is integral to the character and function of the community with little/no provision for substitution (e.g. private property in small rural villages).

NOTE 2 Development land and businesses: a higher sensitivity score can be allocated where a business is the main source of employment for a community with little/no provision for substitution.

1.3.24 For Land use and Accessibility, magnitude of impact will be assigned according to Table 3.12 in the DMRB LA112 (Ref. 15.7). This categorises magnitude of impact as: Major; Moderate; Minor; Negligible; and No Change. This has been outlined in Table 1-3 below.



Table 1-3 Magnitude of Impact (LA 112 Table 3.12)

Magnitude of Impact (change)	Typical Description
Major	<p>Private property and housing, community land and assets, development land and businesses:</p> <p>1) 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</p> <p>2) introduction (adverse) or removal (beneficial) of complete severance with no/full accessibility provision.</p> <p>WCH:</p> <ul style="list-style-type: none"> ■ >500m increase (adverse) / decrease (beneficial) in WCH journey length.
Moderate	<p>Private property and housing, community land and assets, development land and businesses:</p> <p>1) 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>2) introduction (adverse) or removal (beneficial) of severe severance with limited / moderate accessibility provision.</p> <p>WCH:</p> <ul style="list-style-type: none"> ■ >250m - 500m increase (adverse) or decrease (beneficial) in WCH journey length.



Magnitude of Impact (change)	Typical Description
Minor	<p>Private property and housing, community land and assets, development land and businesses:</p> <p>1) 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>2) introduction (adverse) or removal (beneficial) of severance with adequate accessibility provision.</p> <p>WCH:</p> <ul style="list-style-type: none">■ >50m - 250m increase (adverse) or decrease (beneficial) in WCH journey length.



Magnitude of Impact (change)	Typical Description
Negligible	<p>Private property and housing, community land and assets, development land and businesses and agricultural land holdings:</p> <p>1) 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</p> <p>2) very minor introduction (adverse) or removal (beneficial) of severance with ample accessibility provision.</p> <p>WCH</p> <ul style="list-style-type: none"> ▪ <50m increase (adverse) or decrease (beneficial) in WCH journey length.
No change	No loss or alteration of characteristics, features, elements or accessibility; no observable impact in either direction.

Effect Significance

1.3.25 The significance of effect is derived by combining the assigned value (sensitivity) of receptors with the magnitude of change arising from the Proposed Development. DMRB LA112 (Ref.16.10) refers to DMRB LA104 (Ref. 15.8) Table 3.8.1. for determining significance of effect. This categorises significance as the following:

- Very Large: Effects at this level are material in the decision-making process.
- Large: Effects at this level are likely to be material in the decision-making process.



- Moderate: Effects at this level can be considered to be material decision-making factors.
- Slight: Effects at this level are not material in the decision-making process.
- Neutral: No effects or those that are beneath levels of perception, within normal bounds of variation

1.3.26 The significance of effect will be determined using Table 1-4 below.

Table 1-4 Significance of Effect – Land Use and Accessibility

Significance of Effect	Magnitude: No Change	Magnitude: Negligible	Magnitude: Minor	Magnitude: Moderate	Magnitude: Major
Sensitivity: Very High	Neutral	Slight	Moderate or large	Large or very large	Very Large
Sensitivity: High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
Sensitivity: Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or large
Sensitivity: Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or moderate
Sensitivity: Negligible	Neutral	Neutral or Slight	Neutral or Slight	Neutral or Slight	Slight

1.3.27 As set out in Chapter 5: Approach to EIA, effects that are classified as moderate or above are considered to be significant. Effects classified as below moderate are considered to be not significant.

Human Health

1.3.28 A health receptors' sensitivity is based on their ability to experience a potential impact without incurring a substantial change to their health status. The IEMA



Guidance (**Ref. 15.9**) outlines health sensitivity methodology criteria which can be applied, based on the key considerations of what a population's sensitivity is affected by, as outlined in **Table 1-5**.

Table 1-5 Health sensitivity methodology criteria

Category / level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories). The narrative explains that the population or sub-population's sensitivity driven by (select as appropriate):
High	High levels of deprivation (including pockets of deprivation); reliance on resources shared (between the population and the project); existing wide inequalities between the most and least healthy; a community whose outlook is predominantly anxiety or concern; people who are prevented from undertaking daily activities; dependants; people with very poor health status; and/or people with a very low capacity to adapt.
Medium	Moderate levels of deprivation; few alternatives to shared resources; existing widening inequalities between the most and least healthy; a community whose outlook is predominantly uncertainty with some concern; people who are highly limited from undertaking daily activities; people providing or requiring a lot of care; people with poor health status; and/or people with a limited capacity to adapt.



Category / level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories). The narrative explains that the population or sub-population's sensitivity driven by (select as appropriate):
Low	Low levels of deprivation; many alternatives to shared resources; existing narrowing inequalities between the most and least healthy; a community whose outlook is predominantly ambivalence with some concern; people who are slightly limited from undertaking daily activities; people providing or requiring some care; people with fair health status; and/or people with a high capacity to adapt.
Very low	Very low levels of deprivation; no shared resources; existing narrow inequalities between the most and least healthy; a community whose outlook is predominantly support with some concern; people who are not limited from undertaking daily activities; people who are independent (not a carer or dependant); people with good health status; and/or people with a very high capacity to adapt.

1.3.29 Magnitude describes the ‘severity’ of the experience of impact for a health receptor. The IEMA Guidance ‘Determining Significance in Health Impact Assessment’ (Ref. 15.9) outlines criteria on determining magnitude, noting that *“information on exposure, scale, frequency, duration and population extent are likely to come from other EIA topic chapters or the project descriptions”*. Criteria for determining health magnitude are outlined in **Table 1-6**.



Table 1-6 Health magnitude methodology criteria

Category / level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories). The narrative explains that the population or sub-population's magnitude narrative explains that the magnitude of change due to the project is driven by (select as appropriate):
High	High exposure or scale; long-term duration; continuous frequency; severity predominantly related to mortality or changes in morbidity (physical or mental health) for very severe illness/ injury outcomes; majority of population affected; permanent change; substantial service quality implications.
Medium	Low exposure or medium scale; medium-term duration; frequent events; severity predominantly related to moderate changes in morbidity or major change in quality-of-life; large minority of population affected; gradual reversal; small service quality implications.
Low	Very low exposure or small scale; short-term duration; occasional events; severity predominantly related to minor change in morbidity or moderate change in quality-of-life; small minority of population affected; rapid reversal; slight service quality implications.
Negligible	Negligible exposure or scale; very short-term duration; one-off frequency; severity predominantly relates to a minor change in quality-of-life; very few people affected; immediate reversal once activity complete; no service quality implication.



Effect Significance

1.3.30 The IEMA Guidance (**Ref. 15.9**) notes that human health significance should apply professional judgement supported by evidence to determine what a project means for public health, and “*what it means for a change triggered by the project to be ‘important’, ‘desirable’ or ‘acceptable’ for public health*”.

1.3.31 For human health, applying a matrix of sensitivity and magnitude helps to identify if there is “a relevant population (the sensitive receptor) and if there is a relevant project change to a health determinant (magnitude of impact)”. Applying this approach, the IEMA matrix for the significance of a human health effect is outlined in **Table 1-7**.

Table 1-7 Significance of Effect for Human Health

Significance of Effect	Magnitude: High	Magnitude: Medium	Magnitude: Low	Magnitude: Negligible
Sensitivity: High	Major	Major / moderate	Moderate / minor	Minor / negligible
Sensitivity: Medium	Major / moderate	Moderate	Minor	Minor / negligible
Sensitivity: Low	Moderate / minor	Minor	Minor	Negligible
Sensitivity: Very Low	Minor / negligible	Minor / negligible	Negligible	Negligible

1.3.32 The IEMA Guidance (**Ref. 15.9**) outlines reasoning for significance conclusions which will be considered as part of the Human Health assessment. It notes that “*major or moderate effects are considered to be significant and minor or negligible are considered to be not significant*”; this aligns with the approach used for Land Use and Accessibility receptors outlined above, and the methodology in **Chapter 5: Approach to EIA**.



1.4 Baseline Conditions

Private Property and Housing

- 1.4.1 Private property refers to a residential dwelling or residential land or that does not accommodate public space or any other asset. It also includes land allocated within local planning policy for residential development.
- 1.4.2 The dualling of the A47 will require the demolition of the two dwellings at Hill Cottages, located on the eastern side of the existing A47 alignment at Constitution Hill within the Proposed Scheme Boundary.
- 1.4.3 There are a number of residential properties located within the 1km study area outside the Proposed Scheme Boundary; the entirety of West Winch and North Runcton, and parts of South Lynn and Hardwick to the southeast of Kings Lynn. More detail on the dwellings is outlined below (from west to east within the study area, by settlement):
- West Winch and North Runcton
 - Dwellings on the west and east sides of the A10 between Harwick Roundabout to the north and Willow End Farm to the south, encompassing the entirety of West Winch to the west of the A10, North Runcton to the east and four dwellings in Fair Green off Hill Road and Parkhill. This area is estimated to include approximately 2,000 dwellings.
 - Setchey
 - Approximately 35 properties to the west of the A10 in Setchey, between the Cool Stak Warehouse to the north and The Old Toll House to the south.
 - Approximately 25 properties to the east of the A10 in Setchey between 331 Lynn Road to the north and Willow Bend House to the south.



- Hardwick
 - Five properties on the northern side of Hardwick Bridge Road.
 - A cluster of properties on Argyle Street, Sidney Street, and Someville Road, to the north of Hardwick Road Cemetery.
- South Lynn
 - A residential area of approximately 300 dwellings, bounded by the River Great Ouse to the west, A47 to the south, the Nar Ouse Way to the east and Wisbeach Road and Hardings Way to the north.

1.4.4 The Proposed Scheme is located adjacent to an area of land allocated for development as part of the West Winch Growth Area Strategic Policy. This land has been designated under the BKLWN Local Plan (**Ref 15.4**) for development of up to 4,000 dwellings to the east of West Winch.

Community Land and Assets

1.4.5 Community land and assets typically comprise facilities to serve local residents, including education and healthcare, places of worship, parks and open spaces. There are no community assets which fall within the Proposed Scheme Boundary. The following community assets have been identified within the 1km study area and are grouped by broad location:

- West Winch
 - Playing field, approximately 680m west of the scheme, off Back Lane;
 - West Winch Primary School, Back Lane approximately 680m west of the scheme;
 - St Mary's Church, Main Road (A10), approximately 460m west of the scheme;



- A Multi-Use Games Area (MUGA) and children's playground off Watering Lane, approximately 670m west of the scheme;
 - William Burt Social Club, Watering Lane, approximately 680m west of the scheme; and
 - West Winch Bowls Club, Watering Lane, approximately 690m west of the scheme.
- North Runcton
 - North Runcton Scout Hut and associated outdoor space, Chequers Lane, approximately 10m west of the scheme;
 - North Runcton Cricket Club, approximately 650m east of the scheme;
 - All Saints Church, approximately 750m east of the scheme; and
 - Buttercups Pre-school, The Green, approximately 750m east of the scheme.
 - Setchey
 - Plymouth Brethren Christian Church Meeting House, A10 Lynn Road, approximately 230m south of the scheme.

1.4.6 The majority of community facilities are located in the centre of West Winch and North Runcton which are in close proximity to the A10 and New Road respectively. There are no community assets within Hardwick or South Lynn.

1.4.7 Whilst there are no public open spaces within the Proposed Scheme Boundary or study area, there are several areas of Conclusive Registered Common Land under the Countryside Rights of Way (CRoW) Act 2000 ('registered common land') which lie adjacent to the Proposed Scheme Boundary (**Ref. 15.17**):

1.4.8 Hardwick Narrows lies immediately adjacent to the west and southwest of the Proposed Scheme Boundary, off Hardwick Roundabout and Beveridge Way;



- 1.4.9 Sheep's Course Wood is bounded to the north, east, and west by the Proposed Scheme Boundary off the A47; and
- 1.4.10 The northern edge of North Runcton Common to the north of Chequers Lane, lies adjacent to the east of the Proposed Scheme Boundary.
- 1.4.11 Other areas of registered common land which fall within the 1km study area are Setchey Common (off Setch Road to the north) and West Winch Common (located between Puny Drain to the west and West Winch to the east). All these areas of registered common land are also Open Access land as designated under the CRoW Act 2000.
- 1.4.12 Sheep's Course Wood and West Winch Common are also designated County Wildlife Sites (CWS) (**Ref. 15.18**) as well as Brook Watering Meadow CWS (located to the north of Coronation Avenue approximately 350m west of the Proposed Scheme Boundary) and Rush Meadow CWS (west of the A10, approximately 790m to the west of the Proposed Scheme).

Development Land and Businesses

- 1.4.13 Development land and businesses refer to employment premises, or land allocated for economic or industrial development. No development land has been identified within the Proposed Scheme Boundary or the 1km study area Boundary.
- 1.4.14 There are a number of businesses within the 1km study area as outlined below, grouped by broad location:
- West Winch
 - Cool-Stak warehouse storage facility, Lynn Road, immediately adjacent to the west of the Proposed Scheme;
 - West Winch Village Stores, 212 Main Road, approximately 530m west of the Proposed Scheme;
 - West Winch Post Office, 216 Main Road, approximately 550m west of the Proposed Scheme;



- Oriental Palace Chinese Takeaway, Main Road, approximately 560m west of the Proposed Scheme;
 - Harry's Plaice fish and chip takeaway, 58 Back Lane, approximately 800m west of the Proposed Scheme;
 - Woof Woof Dog Daycare, Walnut Avenue, approximately 530m west of the Proposed Scheme;
 - There are ten registered businesses within the Hall Lane residential area, to the west of the A10. These businesses do not operate premises within this location and are instead private hire taxi, trades (electrical and plumbing), or property services owners with businesses registered to those addresses.
 - There are five registered businesses off West Winch Road, north of West Winch and south of Hardwick Roundabout. These businesses do not operate premises within this location and are instead private property services (e.g. fencing, skip hire) or mobile chiropody services owners with businesses registered to those addresses.
 - Indulge Beauty treatment rooms, 4 Babingley Place, approximately 600m west of the Proposed Scheme;
 - There is an Esso petrol garage and Londis store off the A10, approximately 450m west of the Proposed Scheme;
 - There is approximately 50 light industrial, manufacturing, warehouse, and car dealership premises in the industrial estate off Beveridge Road, Hamlin Way, and Hereford Way, immediately adjacent to the west of the Proposed Scheme; and
 - The Dragonfly Hotel, Beveridge Way, lies immediately adjacent to the west of the Proposed Scheme.
- North Runcton



- King's Lynn Caravan and Camping Park, New Road, approximately 600m east of the Proposed Scheme; and
- Yew Cottage B&B, New Road, approximately 700m east of the Proposed Scheme.
- Setchey
 - There are four car sales and repair premises on Garage Lane, off the A10, between 700-800m south of the Proposed Scheme;
 - The Warehouse Antique Shop and Restaurant on Garage Lane, approximately 650m south of the Proposed Scheme;
 - There are approximately 10 warehouse, storage, and haulage premises on Garage Lane, between 700-950m south of the Proposed Scheme;
 - Norfolk Leisure, an outdoor furniture warehouse on Garage Lane, approximately 950m south of the Proposed Scheme; and
 - D&H Direct Agricultural Product Manufacturing, off Lynn Road to the east, approximately 600m south of the Proposed Scheme.
- Hardwick and South Lynn
 - The Hardwick Retail Park and Hardwick Industrial Estate are located off Harwick Road to the south and north respectively. There are approximately 20 retailers (including Sainsburys and Tesco supermarkets, a garden centre, and several fast-food restaurants) and approximately 40 industrial, manufacturing, warehouse, and car dealership premises, a soft play centre, vets, gym, and food manufacturing premises to the north and northwest of the Proposed Scheme. These businesses are located adjacent to the Proposed Scheme at Hardwick Roundabout, and up to 1km north at Rollesby Road.



Walkers, Cyclists and Horse Riders

1.4.15 Public Rights of Way refer to designated routes predominantly used by walkers, cyclists, and horse riders. Users are able to walk on all PRow, however the following usage restrictions exist according to the type of PRow:

- Footpaths - for walking, running, mobility scooters or powered wheelchairs;
- Bridleways - for walking, horse riding, bicycles, mobility scooters or powered wheelchairs;
- Restricted byways - for any transport without a motor and mobility scooters or powered wheelchairs; and
- Byways open to all traffic - for any kind of transport, including cars (however predominantly used by walkers, cyclists and horse riders).

1.4.16 There are two PRow aligned north to south which intersect the Proposed Scheme Boundary: North Runcton RB 3, a restricted byway north of Rectory Lane; and North Runcton BR 4, a bridleway north of Chequers Lane.

1.4.17 There are several other PRow within the 1km study area as outlined below, grouped by broad location:

- West Winch
 - North Runcton FP1 (footpath)
 - North Runcton FP2 (footpath)
 - North Runcton RB2 (restricted byway)
 - West Winch FP 6 (footpath)
 - West Winch FP 2 (footpath) which follows a route south connecting to Setchey
 - West Winch FP 3 (footpath)
 - West Winch FP 4 (footpath)



- West Winch RB 1 (restricted byway)
- North Runcton
 - North Runcton RB 6 (restricted byway)
- Hardwick and South Lynn
 - Kings Lynn RB31 (footpath)
 - Kings Lynn RB30 (restricted bridleway)

1.4.18 There are no National Trails, designated Recreational Routes or National Cycle Network routes within 1km of the Proposed Scheme Boundary. The closest designated Recreational Route; the Nar Valley Way, is approximately 1.3km from the Proposed Scheme Boundary. The closest National Cycle Network route; the northbound Sustrans Local Cycle Route, is approximately 1.9km from the Proposed Scheme Boundary.

Human Health

1.4.19 Human Health is defined by the World Health Organization (**Ref. 15.19**) as “*a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity*”. As such, the assessment of human health and related human health baseline is influenced by a range of factors, termed the ‘wider determinants of health’, the most relevant of which are outlined below in order to establish a baseline position for the purposes of this assessment.

Population and Economy

1.4.20 The four LSOAs within which the Proposed Scheme Boundary and surrounding 1km study area lie (11D, 11F, 14D, and 14E) have a total combined population of 7,393 according to the most recently available data at the time of writing (2020). This compares with the total resident population at borough level of 154,900 (BKLWN), and 918,400 at county level (Norfolk) (**Ref. 15.14**).



1.4.21 The proportion of the resident population aged 16-64 as a percentage of the total resident population in the four LSOAs, KLWN, and Norfolk is shown in Table 1-8. People within this age group are considered to be of ‘working age’ and economically active, as defined by the ONS. The proportion of working age individuals within these geographies is varied, with the notable exception being LSOA 11F (67.8%) which is considerably higher than all the other geographies, and slightly higher than the Great Britain average of 62.9%.

Table 1-8 Population aged 16-64 (% of the resident population)

LSOA 11D	LSOA 11F	LSOA 14D	LSOA 14E	KLWN	Norfolk
60.6%	67.8%	54.3%	53.2%	57.7%	59.2%

1.4.22 Of those working age residents, the proportion in employment was considerably lower across the four LSOAs, compared to both the borough (BKLWN) and county level. Notably, residents in employment in KLWN (81.1%) and Norfolk (81.6%) were both slightly higher than the Great Britain rate of 75.5%.

Table 1-9 Employment and unemployment (% of the working age population)

Employment Status	LSOA 11D	LSOA 11F	LSOA 14D	LSOA 14E	KLWN	Norfolk
Employed	54.7%	67.3%	63.5%	61.1%	81.8%	81.6%
Unemployed	45.3%	32.7%	36.5%	38.9%	18.2%	18.4%

1.4.23 Table 1-9 shows the proportion of total employees working in each industry sector. Employment by industry is broadly similar within all geographies, with the exception of LSOAs 11D and 11F which have a significantly higher proportion of employees in Sector C: Manufacturing (21.3% and 20.8% respectively), and a somewhat higher proportion of employees in Sector G: Wholesale and retail trade; repair of motor vehicles and motorcycles (21.3% and 20.8% respectively) compared with the other LSOAs, the local authority and county level. In line with this, rates of employment in Sector M: Professional, scientific and technical activities is significantly lower in LSOAs



11D (1.8%) and 11F (2.7%) compared with the other baseline geographies. This suggests both a concentration of potentially lower skilled individuals living within these two LSOAs, and an associated lower level of educational attainment (see Table 1-10 below for further details).

Table 1-10 Proportion of total employees in each industry sector

Industry Sector	LSOA 11D	LSOA 11F	LSOA 14D	LSOA 14E	KLWN	Norfolk
B: Mining and quarrying	0.0	0.0	0.4	0.3	0.1	0.1
C: Manufacturing	21.4	22.1	12.9	12.4	12.3	9.5
D: Electricity, gas, steam and air conditioning supply	0.5	0.1	0.4	0.6	0.2	0.2
E: Water supply; sewerage, waste management and remediation activities	1.1	0.9	0.6	0.9	0.8	0.7
F: Construction	6.2	7.1	9.9	11.6	6.7	6.0
G: Wholesale and retail trade; repair of motor vehicles and motorcycles	21.3	20.8	17.5	15.4	15.5	16.8



Industry Sector	LSOA 11D	LSOA 11F	LSOA 14D	LSOA 14E	KLWN	Norfolk
H: Transportation and storage	4.4	4.8	3.2	3.4	5.6	3.5
I: Accommodation and food service activities	7.5	6.0	4.5	4.6	7.9	10.3
J: Information and communication	1.1	1.0	2.2	1.9	3.6	1.9
K: Financial and insurance activities	1.9	2.3	3.5	1.1	2.4	3.3
L: Real estate activities	0.7	0.2	1.0	0.9	1.9	1.9
M: Professional, scientific and technical activities	1.8	2.7	4.0	5.1	9.0	5.4
N: Administrative and support service activities	6.6	5.0	2.8	3.6	11.0	6.5



Industry Sector	LSOA 11D	LSOA 11F	LSOA 14D	LSOA 14E	KLWN	Norfolk
O: Public administration and defence; compulsory social security	3.2	3.8	8.2	8.7	3.5	4.6
P: Education	5.1	7.0	8.4	7.4	8.7	8.7
Q: Human health and social work activities	11.0	12.5	13.9	16.0	12.4	16.3
R: Arts, entertainment and recreation	No data available	No data available	No data available	No data available	2.2	2.4
S: Other service activities	No data available	No data available	No data available	No data available	1.7	1.4

Note: Where no data is shown, the data sample size is too small according to geographical area to prevent disclosure of personal information.

1.4.24 The educational attainment of the economically active population of KLWN is broadly similar to that of Norfolk, as shown in Table 1-11. Rates across the four LSOAs are varied, however the overall pattern of attainment shows lower levels of qualifications for residents within LSOA 11D and 11F. This aligns with the breakdown of employees by industry sector, with those residents achieving lower qualifications likely to be employed in trade and manufacturing sectors.



Table 1-11 Qualifications

Qualification	LSOA 11D	LSOA 11F	LSOA 14D	LSOA 14E	KLWN	Norfolk
NVQ4 and Above	11.6	13.6	21.5	22.3	19.1	21.9
NVQ3 and Above	8.8	10.4	13.3	11.5	11.0	11.8
NVQ2 and Above	16.1	17.5	17.1	13.6	16.2	16.2
NVQ1 and Above	16.2	16.1	15.9	11.7	14.5	14.3
Other Qualifications	11.6	9.3	4.8	6.0	6.1	5.3
No Qualifications	37.1	30.6	22.9	29.7	29.3	26.3

1.4.25 The Indices of Multiple Deprivation (**Ref. 15.16**) uses a combination of information relating to seven ‘domains’: income; employment; health deprivation and disability; education, skills and training; barriers to housing; and crime and living environment to create an overall score of deprivation. Deprivation is scored between 1 and 317 (representing the 317 local authorities within England), with a score of 1 being most deprived and 317 being least deprived.

1.4.26 The Indices of Multiple Deprivation 2019 ranks KLWN 79th of 317 local authorities and therefore falls within the top 25% most deprived areas within England.

1.4.27 The Office for Health Improvement and Disparities (formerly Public Health England) also produce health deprivation scores as part of their local authority profiles, and these are based on a scale between 5.5 (the local authority in



England with the lowest levels of health deprivation) and 45.0 (the local authority with the highest levels of health deprivation). For BKLWN, the health deprivation score was 23.7; slightly lower than the England average of 21.7. This data is not available at any geography below local authority level as the data sample size is too small to prevent disclosure of personal information.

Health

1.4.28 The Office for Health Improvement and Disparities produces health profiles for each local authority and county in England. The 2021 local authority health profile for KLWN (the most recently available data at the time of writing) indicates that the health status of the population is varied compared with the England average. This is also reflected in the health status of the population within Norfolk as a whole:

- Average life expectancy within KLWN is 79.9 years for males and 83.0 years for females, broadly in line with both Norfolk (79.6 years and 83.2 years respectively) and the England averages (78.7 years and 82.8 years).
- There are a number of health indicators for which KLWN performs 'significantly better' than the England average, including: under 75 years mortality rate; proportions of children from low income families; hospital admissions as a result of violent crime; and incidence of sexually transmitted infections and tuberculosis. Norfolk also performs significantly better than the England average for all of these indicators except mortality rate, and also has slightly better rates of: deaths following road accidents; hip fractures in over 65 year olds; breastfeeding rates; and childhood obesity.
- By comparison, indicators for which KLWN performed 'significantly worse' than the England average include: rates of self-harm; dementia rates; proportion of adults undertaking regular physical activity; smoking during pregnancy; and infant mortality rates. Norfolk also performs significantly worse than England for rates of self-harm, and



smoking during pregnancy, as well as: hospital admissions related to alcohol use; and winter mortality rates.

1.4.29 For further detail on baseline conditions with regard to human health, see **Chapter 6: Air Quality, Chapter 9: Landscape and Visual, and Chapter 10: Noise and Vibration** for further detail.

1.4.30 The Air Quality baseline identifies that within the surrounding area, the main sources of Nitrogen Oxides (NO_x) (including nitrogen dioxide and nitrogen monoxide) are road traffic emissions from the A149, A47 and A10, with roadside nitrogen dioxide (NO₂) concentrations within 200m (for Air Quality, LA 105 requires consideration of an area within 200m from proposed construction activities) of the Proposed Scheme Boundary well below the 40 microgram (µg)/m³ standard. Within the study area, the main sources of particulate matter (PM)₁₀ and PM_{2.5} are road traffic generated emissions from the A149, A47 and A10, with background PM₁₀ and PM_{2.5} concentrations within 200m of the Proposed Scheme Boundary well below the respective 40µg/m³ and 20µg/m³ standards.

1.4.31 The Landscape and Visual baseline identifies key relevant assets within the study area as PRoW and footways, Common Land, the majority of residential receptors, and businesses at the southern boundary of Hardwick Industrial Estate, and Cool Stak.

1.4.32 The Noise and Vibration baseline identifies that there are seven Noise Important Areas in the local area; all are groups residential dwellings located along the A10. Noise Important Areas are locations that the Department for the Environment and Rural Affairs (Defra) has identified as containing the 1% of the population that are affected by the highest noise levels.

Future baseline

1.4.33 A number of demographic factors are likely to experience natural fluctuation and change, including total population and the proportion of working age residents. According to the ONS Subnational population projections, the resident population in BKLWN is expected to increase by 5.5% between 2018



and 2043 (**Ref. 15.20**). An increase in population will create greater demand for jobs and services in the locality, as well as increased pressure on the local housing market, which in turn has the potential to increased congestion from residents, employees, and commuters using the A10 and A47.

1.5 Design and Embedded Best Practice Mitigation Measures

1.5.1 The design and embedded mitigation measures associated with construction and operation of the Proposed Scheme are outlined below:

Construction

- Appropriate diversions implemented for PRow temporarily disrupted during construction in order to minimise effects on accessibility and severance for WCHs. Where appropriate diversions are not available, temporary closures may be required. Temporary re-routing/ diversions of the PRow will be discussed and agreed with the BKLWN Council Public Rights of Way Officer prior to the start of construction activities and will be set out in the Construction Traffic Management Plan (CTMP). Where appropriate, diversions will have heras fencing along the boundary of the diverted PRow during construction to ensure users do not stray onto the construction site.
- Any PRow, footway or carriageway diversions or closures undertaken during construction will be clearly advertised with signage and a map prior to the commencement of works. The signage will display the temporary diversion routes in place.
- Design of the diverted routes for WCH will consider vulnerable user groups (such as children, older people, and wheelchair users) and ensure accessibility is maintained for those with limited mobility where practicable.
- The appointed contractor will engage a Public Liaison Officer to communicate with residents, businesses, community facilities (and other relevant user groups identified) prior to the commencement of



construction works to ensure they are aware of the programme and nature of the works; in particular, any works planned to take place at night. Out of hours construction work will be agreed with the BKLWN Council and/or Norfolk County Council (as relevant) in advance.

- Access to residential properties, businesses, and community facilities will be maintained throughout the construction period, in agreement with occupants.
- The Public Liaison Officer will also advise residents, businesses, community facilities and other groups in the event of upcoming works with the potential for noise disturbance. They will also maintain a list of complaints and actions.

Operation

1.5.2 No opportunities or requirements for mitigation or enhancements during operation have currently been identified.

1.6 Sensitive Receptors

1.6.1 The sensitivity of a population encompasses their ability to withstand exposures and the range of associated impacts or effects, and the physiological and socio-economic factors that increase their susceptibility to the exposure. The key sensitive receptors are outlined below, with those related to Land Use and Accessibility reported as either **negligible**, **low**, **medium**, **high**, or **very high**. The sensitivity of health receptors is reported differently to Land use and Accessibility. As outlined in IEMA Health Impact Assessment Guidance (**Ref. 15.9**), populations may have varying levels of sensitivity that result in greater positive or negative health effects compared with the baseline. The key sensitive receptors for human health are reported as either **very low**, **low**, **medium** or **high**.

1.6.2 Using the baseline information set out in Section 15.13, the sensitivity of the receptors for each topic within the 1km study area is detailed below:



Table 1-12 Summary of sensitive receptors

Topic	Sensitive Receptors	Sensitivity	Justification
Private property and housing	Two dwellings at Hill Cottages on Constitution Hill belonging to Hardwick farm	Very high	Both properties are to be demolished to enable construction of the Proposed Scheme.
Private property and housing	One dwelling; Frankie Cottage, on the south side of Chequers Lane.	Medium	In line with LA 112 guidance, an existing dwelling in an area with less than 30 other properties.
Private property and housing	Dwellings on the west and east sides of the A10 between Hardwick Roundabout to the north and Cool Stak to the south (the entirety of West Winch, North Runcton to the east and four dwellings in Fair Green off Hill Road and Parkhill). Estimated as c.2,000 dwellings.	Very high	In line with LA 112 guidance, the area of housing is over 150 dwellings.
Private property and housing	Approximately 30-35 properties to the west of the A10 in Setchey, between the Cool Stak Warehouse to the north and The Old Toll House to the south.	Medium	In line with LA 112 guidance, the area of housing is (approximately) 30 dwellings.



Topic	Sensitive Receptors	Sensitivity	Justification
Private property and housing	Approximately 25-30 properties to the east of the A10 in Setchey between 331 Lynn Road to the north and Willow Bend House to the south.	Medium	In line with LA 112 guidance, the area of housing is (approximately) 30 dwellings.
Private property and housing	Dwellings in Hardwick - five properties on the northern side of Hardwick Bridge Road and a cluster of properties on Argyle Street, Sidney Street, and Someville Road, to the north of Hardwick Road Cemetery.	Medium	In line with LA 112 guidance, the area of housing is less than 30 dwellings.
Private property and housing	Dwellings in South Lynn – estimated as c. 300 dwellings, bounded by the River Great Ouse to the west, A47 to the south, the Nar Ouse Way to the east and Wisbeach Road and Hardings Way to the north.	Very high	In line with LA 112 guidance, the area of housing is over 150 dwellings.
Private property and housing	Land allocated within the BKLWN Council Local Plan for development of 4,000 dwellings, to the east of West Winch	Very high	In line with LA 112 guidance, the area of land allocated for housing delivery is over 150 dwellings.



Topic	Sensitive Receptors	Sensitivity	Justification
Community land and assets	Playing field	High	Frequent (weekly) level of use and no alternative facilities in the vicinity
Community land and assets	West Winch Primary School	Very High	Frequent (daily) level of use, accessed by a vulnerable group (children), with the asset likely to be used by the majority of the local community
Community land and assets	St Mary's Church	High	Frequent (weekly) level of use and no alternative facilities in the vicinity
Community land and assets	MUGA and children's playground off Watering Lane	High	Frequent (weekly) level of use, accessed by a vulnerable group (children), and no alternative facilities in the vicinity
Community land and assets	William Burt Social Club	High	Frequent (weekly) level of use and no alternative facilities in the vicinity
Community land and assets	West Winch Bowls Club	High	Frequent (weekly) level of use and no alternative facilities in the vicinity



Topic	Sensitive Receptors	Sensitivity	Justification
Community land and assets	North Runcton Scout hall	High	Frequent (weekly) level of use, accessed by a vulnerable group (children), and no alternative facilities in the vicinity
Community land and assets	North Runcton Cricket Club	High	Frequent (weekly) level of use and no alternative facilities in the vicinity
Community land and assets	All Saints Church	High	Frequent (weekly) level of use and no alternative facilities in the vicinity
Community land and assets	Buttercups Pre-school	High	Frequent (daily) level of use, accessed by a vulnerable group (children), with the asset likely to be used by some of the local community
Community land and assets	Plymouth Brethren Christian Church Meeting House	High	Frequent (weekly) level of use and no alternative facilities in the vicinity
Community land and assets	Hardwick Narrows, Sheep's Course Wood and North Runcton Common	High	Adjacent to the Proposed Scheme boundary and assumed frequent (weekly) level of usage.
Community land and assets	Setchey Common and West Winch Common	High	Assumed frequent (weekly) level of usage.



Topic	Sensitive Receptors	Sensitivity	Justification
Development Land and Businesses	West Winch Village Stores	Medium	Frequent (daily) level of use, with the asset likely to be used by a moderate proportion of the local community. Alternative facilities are available in nearby villages.
Development Land and Businesses	West Winch Post Office	Medium	Frequent (daily) level of use, with the asset likely to be used by a moderate proportion of the local community. Alternative post office branches are available in nearby villages.
Development Land and Businesses	Oriental Palace Chinese Takeaway, West Win	Medium	Frequent (daily) level of use assumed, few alternative facilities in the vicinity. Small business with a single operating location.
Development Land and Businesses	Harry's Plaice fish and chip takeaway, West Winch	Medium	Frequent (daily) level of use assumed. Few alternative facilities in the vicinity. Small business with a single operating location.



Topic	Sensitive Receptors	Sensitivity	Justification
Development Land and Businesses	Woof Woof Dog Daycare, West Winch	Medium	Frequent (daily) level of use assumed, no alternative facilities in the vicinity. Small business with a single operating location.
Development Land and Businesses	Cool-Stak warehouse storage, West Winch	Medium	Frequent (daily) level of use assumed, other similar facilities locally offering storage and warehousing. A large business assumed to have a number of employees.
Development Land and Businesses	Indulge Beauty, West Winch	Medium	Frequent (daily) level of use assumed, no alternative facilities in the vicinity. Small business with a single operating location.
Development Land and Businesses	Esso garage and Londis, West Winch	Medium	Frequent (daily) level of use assumed, other similar facilities in South Lynn and wider local area.



Topic	Sensitive Receptors	Sensitivity	Justification
Development Land and Businesses	c.50 light industrial, manufacturing, warehouse, and car dealership premises off Beveridge Road, Hamlin Way, and Hereford Way	Medium	Existing established employment location with multiple businesses with frequent (daily) level of use.
Development Land and Businesses	The Dragonfly Hotel, Beveridge Way	High	Frequent (daily) level of use assumed, adjacent to the Proposed Scheme Boundary.
Development Land and Businesses	King's Lynn Caravan and Camping Park	High	Large site with multiple pitches, likely to be accessed by visitors from outside the area. Some alternative facilities available in the wider area.
Development Land and Businesses	Yew Cottage B&B, North Runcton	High	Frequent () level of use, small premise with a single operating location.
Development Land and Businesses	Four car repair and dealership premises on Garage Lane	Medium	Frequent (daily) level of use assumed, other similar facilities in the and wider local area.
Development Land and Businesses	The Warehouse Antique Shop and Restaurant	Medium	Frequent (daily) level of use, premise with a single operating location.



Topic	Sensitive Receptors	Sensitivity	Justification
Development Land and Businesses	c.10 warehouse, storage, and haulage premises off Garage Lane	Medium	Existing established employment location with multiple businesses with frequent (daily) level of use.
Development Land and Businesses	Norfolk Leisure	Medium	Frequent (daily) level of use, premise with a single operating location.
Development Land and Businesses	D&H Direct Agricultural Product Manufacturing	Medium	Frequent (daily) level of use assumed, no alternative facilities in the vicinity. Business with a single operating location.
Walkers, cyclists and horse-riders	West Winch FP 2	Medium	Route that is likely to be used daily for recreational purposes. Connects West Winch to Setchey. Other pedestrian footways nearby offering access along a similar alignment; however this is via pavements rather than dedicated PRow.



Topic	Sensitive Receptors	Sensitivity	Justification
Walkers, cyclists and horse-riders	West Winch FP 3	Medium	Route that is likely to be used daily for recreational purposes. Other pedestrian footways nearby offering access along a similar alignment; however this is via pavements rather than dedicated PRow.
Walkers, cyclists and horse-riders	West Winch FP 4	Medium	Route that is likely to be used daily for recreational purposes. Other pedestrian footways nearby offering access along a similar alignment; however this is via pavements rather than dedicated PRow.
Walkers, cyclists and horse-riders	West Winch FP 6	Low	Short route with limited recreational value, likely to be used weekly.



Topic	Sensitive Receptors	Sensitivity	Justification
Walkers, cyclists and horse-riders	West Winch RB 1	Medium	Route that is likely to be used daily for recreational purposes. Other pedestrian footways nearby offering access along a similar alignment; however this is via pavements rather than dedicated PRow.
Walkers, cyclists and horse-riders	North Runcton FP 1	Medium	Route that is likely to be used daily for recreational purposes. Other pedestrian footways nearby offering access along a similar alignment; however this is via pavements rather than dedicated PRow.
Walkers, cyclists and horse-riders	North Runcton FP 2	Medium	Route that is likely to be used daily for recreational purposes. Other pedestrian footways nearby offering access along a similar alignment; however this is via pavements rather than dedicated PRow.



Topic	Sensitive Receptors	Sensitivity	Justification
Walkers, cyclists and horse-riders	North Runcton RB 2	Medium	Route that is likely to be used daily for recreational purposes. Other pedestrian footways nearby offering access along a similar alignment; however this is via pavements rather than dedicated PRow.
Walkers, cyclists and horse-riders	North Runcton RB 3	High	Route that is likely to be used daily for recreational purposes. Limited recreational routes nearby offering access along a similar alignment. This restricted byway is anticipated to require permanent diversion or closure to enable construction of the Proposed Scheme.



Topic	Sensitive Receptors	Sensitivity	Justification
Walkers, cyclists and horse-riders	North Runcton BR 4	High	Route that is likely to be used daily for recreational purposes. Limited recreational routes nearby offering access along a similar alignment. This restricted byway is anticipated to require permanent diversion or closure to enable construction of the Proposed Scheme.
Walkers, cyclists and horse-riders	North Runcton RB 6	Medium	Route that is likely to be used daily for recreational purposes. Other pedestrian footways nearby offering access along a similar alignment; however this is via pavements rather than dedicated PRow.



Topic	Sensitive Receptors	Sensitivity	Justification
Walkers, cyclists and horse-riders	Kings Lynn RB 30	Medium	Route that is likely to be used daily for recreational purposes. Other pedestrian footways nearby offering access along a similar alignment, however this is via pavements rather than dedicated PRow.
Walkers, cyclists and horse-riders	Kings Lynn RB 31	Medium	Route that is likely to be used daily for recreational purposes. Other pedestrian footways nearby offering access along a similar alignment, however this is via pavements rather than dedicated PRow.



Topic	Sensitive Receptors	Sensitivity	Justification
Human health	<p>Local population (For human health the local population is deemed to be the sensitive receptor, rather than individuals. This is in line with IEMA's Guidance on 'Determining Significance for Human Health in Environmental Impact Assessment. (Ref. 15.9). (The guidance states that <i>"EIA analysis at the level of individuals would likely mean that all determinants of health conclusions, positive or negative, would be significant on all projects because of the effects to some particularly sensitive individuals. This would be contrary to supporting decision-makers in identifying the material issues. Assessment of EIA significance at the level of individuals is not proportionate."</i>)</p>	Medium	<p>The overall health of the local population within the 1km study area, and the wider KLWN and Norfolk geographies is deemed to be broadly in line with the national average. It is recognised there are some areas of deprivation, and a mix of skilled and unskilled professions and educational attainment, however for some health indicators the locality is in line with or better than the national average.</p>



1.7 Assessment of Potential Effects, Mitigation and Residual Effects

Construction Phase

Land use and accessibility

Private property and housing

- 1.7.1 There are estimated to be approximately 2,500-3,000 private properties located in the 1km study area, predominantly located within West Winch and North Runcton. The majority of these properties will remain unaffected by the construction of the Proposed Scheme.
- 1.7.2 There are two private properties which will require demolition; Hill Cottages (two dwellings) on the eastern side of the A47 at Constitution Hill. Agreements with the owner of the two dwellings to be demolished have not yet been made at the time of writing; land negotiations are ongoing, and whilst it is intended that the properties will be purchased by the Applicant, an agreement has not yet been confirmed. As such, assuming a 'worst case' scenario where both dwellings are acquired under Compulsory Purchase powers without an advance agreement in place with the owner of the properties, compensation would be paid at a rate in line with the Compensation Code which would be based on market value.
- 1.7.3 It is anticipated that during peak construction, there is one property on the south side of Chequers Lane (Frankie Lodge) which has the potential to experience disruption to access (as a result of traffic delays and increased vehicle movements) due to its proximity to the construction traffic HGV route. Construction traffic and HGVs will be routed along the A47 west, A47 east, A149 north, Hardwick Road, and the A10 south. Access to the Site will be via the existing A10 south, with vehicles turning right onto Chequers Lane. An existing access point to the agricultural field within the Proposed Scheme Boundary will be used. The overall construction duration will be approximately 24 months, with peak construction (when HGV and construction traffic movements will be highest) taking place for approximately three months for 10



hours / day (7.30am to 5.30pm). Chapter 16: Traffic and Transport identifies that 17% of the total construction vehicle movements will be via the A10 and Chequers Lane. However, due to the peak construction duration lasting for a short term (three month) period, and the vehicle access point for the Proposed Scheme being located approximately 125m to the east of the property, construction vehicles will be travelling past the property rather than queuing or stopping which should limit any disruption to access for residents.

1.7.4 The following residential dwellings are unlikely to experience disruption or change to access associated with the construction works, due to their distance from the Proposed Scheme and construction traffic routes:

- The estimated c.2,000 dwellings on the west and east sides of the A10 between Harwick Roundabout to the north and Willow End Farm to the south (the entirety of West Winch, North Runcton to the east and four dwellings in Fair Green off Hill Road and Parkhill).
- The estimated c.300 dwellings in South Lynn, bounded by the River Great Ouse to the west, the A47 to the south, the Nar Ouse Way to the east, and Wisbech Road and Hardings Way to the north.
- The estimated 30-35 properties to the west of the A10 and 25-30 properties to the east of the A10 in Setchey, between the Cool Stak Warehouse and 331 Lynn Road to the north and The Old Toll House and Willow Bend House to the south.
- Five properties in Hardwick on the northern side of Hardwick Bridge Road, and a cluster of properties on Argyle Street, Sidney Street, and Somerville Road, to the north of Hardwick Road Cemetery.
- Land allocated within the BKLWN Local Plan for development of 4,000 dwellings, to the east of West Winch are part of the West Winch Growth Area (WWGA).



Table 1-13 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – Private property and Housing

Sensitive receptor	Hill Cottages (two dwellings), A47
Potential effects	In the absence of mitigation measures, the demolition of these two properties will require tenants to permanently relocate and lose their homes. As such, both properties are assessed as having very high sensitivity, and the magnitude of impact is considered to be major given that residents will experience loss of their homes. This will give rise to a direct, permanent, long-term very large adverse (significant) effect on the residents of these two properties.
Additional mitigation	Assuming a ‘worst case’ scenario, both dwellings will be acquired under Compulsory Purchase powers. Mitigation in the form of compensation would be provided by the Applicant to the owner of the properties, paid in line with Compensation Code.
Residual effects and monitoring	Following mitigation, the residual magnitude of impact is negligible. This will therefore result in a direct, permanent, long-term slight adverse (not significant) residual effect on the residents of the two properties following the implementation of mitigation measures.



Table 1-14 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – Private property and Housing

Sensitive receptor	Frankie Lodge, Chequers Lane
Potential effects	Frankie Lodge is assessed as having medium sensitivity due to its proximity to the construction traffic route, and the magnitude of impact is considered to be minor given that construction traffic will be passing the property rather than waiting or entering the construction site nearby. This will give rise to a temporary, medium-term slight adverse (not significant) effect on the residents of the property.
Additional mitigation	There is no mitigation required in relation to this property.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a temporary, medium-term slight adverse (not significant) effect on the residents of the property.

Table 1-15 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – Private property and Housing

Sensitive receptor	c.2,000 dwellings to the east and west of the A10, and c.300 dwellings in South Lynn
Potential effects	These properties are assessed as having a very high sensitivity due to the situation of over 150 dwellings in this location (as per LA 112 guidance), and the magnitude of impact is considered to be negligible given that dwellings in these areas are located away from the construction site and construction traffic route. This will give rise to a temporary, medium-term slight adverse (not significant) effect on residents in these locations.
Additional mitigation	There is no mitigation required in relation to these properties.



Sensitive receptor	c.2,000 dwellings to the east and west of the A10, and c.300 dwellings in South Lynn
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a temporary, medium-term slight adverse (not significant) effect on residents in these locations.

Table 1-16 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – Private property and Housing

Sensitive receptor	Properties in Hardwick, north of Hardwick Road Cemetery, and in Setchey
Potential effects	These properties are assessed as having a medium sensitivity due to the situation of less than 50 dwellings in each location (as per LA 112 guidance), and the magnitude of impact is considered to be negligible given that dwellings in these areas are located away from the construction site and construction traffic route. This will give rise to a temporary, medium-term neutral (not significant) effect on residents in these locations.
Additional mitigation	There is no mitigation required in relation to these properties.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a temporary, medium-term neutral (not significant) effect on residents in these locations.



Table 1-17 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – Private property and Housing

Sensitive receptor	WWGA land allocation
Potential effects	This land allocation is assessed as having very high sensitivity due to the potential to accommodate >150 dwellings in this location (as per LA 112 guidance), and the magnitude of impact is considered to be no change as the site is not currently built out. The housing to be delivered here is considered to be dependent on delivery of the Proposed Scheme and those dwellings cannot be occupied until the Proposed Scheme is complete and operational. This will give rise to a temporary, medium-term neutral (not significant) effect on the land allocation.
Additional mitigation	There is no mitigation required in relation to the WWGA land allocation.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a temporary, medium-term neutral (not significant) effect on the land allocation.

Land use and accessibility: Community land and assets

1.7.5 There are 15 community land and community asset receptors located within the 1km study area, including: a primary school; two places of worship; a pre-school; four community halls or centres; two outdoor recreational facilities; and five areas of registered common land.

1.7.6 There are no community assets which fall within the Proposed Scheme Boundary; however immediately adjacent are three areas of common land: Hardwick Narrows; Sheep’s Course Wood; and North Runcton Common. Whilst there is the potential for users of these areas of common land to experience slight disruption to access (with Chapter 16: Traffic and Transport identifying that approximately 48% of total construction traffic movements will access the Site via the A47) the construction works will adopt a phased



approach, with access maintained to Hardwick Narrows, Sheep's Course Wood, and North Runcton Common.

- 1.7.7 Construction activities have the potential to affect the users of North Runcton Scout Hut as a result of disruption to access due to its proximity to the construction traffic HGV route and site access point. Chapter 16: Traffic and Transport identifies that 17% of the total construction vehicle movements will be via the A10 and Chequers Lane. However, due to the peak construction duration lasting for a short term (three month) period, and the vehicle access point for the Proposed Scheme being located approximately 400m to the west of the property, construction vehicles will be routing into the Site prior to reaching the Scout Hut, rather than queuing or stopping nearby, which should limit any disruption to access for users.
- 1.7.8 The other community land and assets identified within the 1km study area are anticipated to remain largely unaffected due to their distance from the Proposed Scheme and construction traffic route. West Winch Primary School is located approximately 680m to the west of the Proposed Scheme Boundary; therefore there is not anticipated to be disturbance to access or delays experienced by pupils and staff as a result of construction vehicle movements.
- 1.7.9 The other community assets including shops, places of worship, sports and recreational facilities which fall within the 1km study area are anticipated to be used regularly and by a significant proportion of the local community. However, access to and use of these assets is not likely to be directly impacted by the construction phase, as they are distant from the Proposed Scheme Boundary and Site access.



Table 1-18 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – Community Land and Assets

Sensitive receptor	Hardwick Narrows, Sheep’s Course Wood, and North Runcton Common
Potential effects	These areas of community land are assessed as having high sensitivity due to their proximity to the Proposed Scheme Boundary, their importance as local assets, and their assumed regular weekly usage. The magnitude of impact is considered to be minor given that access will be maintained and users will still be able to undertake recreational use of the land during construction. This will give rise to a temporary, medium-term slight adverse (not significant) effect on the areas of common land and their users.
Additional mitigation	There is no mitigation required in relation to these areas of community land.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a temporary, medium-term slight adverse (not significant) effect on the areas of land and their users.

Table 1-19 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – Community Land and Assets

Sensitive receptor	North Runcton Scout Hut
Potential effects	The scout hut is assessed as having high sensitivity due to its proximity to the Proposed Scheme Boundary and the likely regular usage of the facility and usage by a vulnerable group (children), and construction works would result in a minor magnitude of impact given that access would be maintained throughout construction. This will give rise to a temporary, medium-term slight adverse (not significant) effect on the users of this facility.



Sensitive receptor	North Runcton Scout Hut
Additional mitigation	There is no mitigation required in relation to the scout hut.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a temporary, medium-term slight adverse (not significant) effect on the users of North Runcton Scout Hut.

Table 1-20 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – Community Land and Assets

Sensitive receptor	West Winch Primary School
Potential effects	The school is considered to have very high sensitivity due to its daily usage during term times by a vulnerable group (children) likely by a high proportion of the local community. Construction works would result in a negligible magnitude of impact due to the school’s distance from the Proposed Scheme Boundary and the fact that there is not anticipated to be disruption to access or delays for school users. This would give rise to a temporary, medium-term slight adverse (not significant) effect on the pupils and teachers at the school.
Additional mitigation	There is no mitigation required in relation to the school.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a temporary, medium-term slight adverse (not significant) effect on the pupils and teachers at West Winch Primary School.



Table 1-21 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – Community Land and Assets

Sensitive receptor	Other community assets including shops, places of worship, sports and recreational facilities
Potential effects	The other community assets have a high sensitivity due to their likely daily usage, and construction works would result in no change to the magnitude of impact due to their distance from the Proposed Scheme and construction traffic routes. This would give rise to a temporary, medium-term neutral (not significant) effect on the users of the community facilities.
Additional mitigation	There is no mitigation required in relation to the community facilities.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a temporary, medium-term neutral (not significant) effect on the users of the community facilities.

Land use and accessibility: Development land and Businesses

1.7.10 There are numerous businesses located in the 1km study area, predominantly located at the industrial estate off Beveridge Way, and the Hardwick Retail Park and Hardwick Industrial Estate are located off Harwick Road. The majority of the businesses within the 1km study area will remain unaffected by the construction of the Proposed Scheme, either due to their distance from the Proposed Scheme Boundary, or due to the type of business (e.g. manufacturing and industrial premises) which are unlikely to be disrupted by construction activities in terms of viability, and the ability to undertake business activities.

1.7.11 The Cool-Stak warehouse storage facility is located off Lynn Road, immediately adjacent to the west of the Proposed Scheme Boundary. It is anticipated that during peak construction, there is limited potential for disruption to the business and its ability to trade.



- 1.7.12 The Dragonfly Hotel, Beveridge Way lies immediately adjacent to the west of the Proposed Scheme Boundary. It is anticipated that during peak construction, there is limited potential for disruption to the hotel and its ability to trade. The presence of the Proposed Scheme Boundary and construction traffic routed via the A10 are not anticipated to give rise to perceptible changes to the hotel in terms of its ability to operate.
- 1.7.13 King's Lynn Caravan and Camping Park, North Runcton, is situated approximately 600m east of the Proposed Scheme Boundary. There is limited potential for users of Park to experience disruption to access (with the construction traffic route accessing the Site via the A47, approximately 600m north) with access via New Road maintained at all times during construction.
- 1.7.14 Yew Cottage B&B, North Runcton, is situated approximately 700m east of the Proposed Scheme Boundary. There is limited potential for users of the B&B to experience disruption, with access via New Road maintained at all times during construction.
- 1.7.15 The Hardwick Retail Park and Hardwick Industrial Estate are located off Harwick Road to the south and north respectively, between 50m and 1km from the Proposed Scheme Boundary. There are approximately 20 retailers and approximately 40 industrial, manufacturing, warehouse, and car dealership premises. It is anticipated that during peak construction, there is limited potential for disruption to the retail park and industrial estate and the ability of the businesses there to trade.
- 1.7.16 The other businesses including: four car sales and repair premises; the Warehouse Antique Shop and Restaurant; approximately 10 warehouse, storage, and haulage premises; and Norfolk Leisure outdoor furniture warehouse on Garage Lane, and D&H Direct Agricultural Product Manufacturing off Lynn Road are not likely to be directly impacted by the construction phase given their distance from the Proposed Scheme Boundary.



Table 1-22 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – Development Land and Businesses

Sensitive receptor	Cool Stak
Potential effects	Cool Stak is considered to have medium sensitivity due to the nature of the business (warehousing and storage) and the fact it does not cater to passing trade. The construction works will result in a negligible magnitude of impact due to the location of the Proposed Scheme and the fact that construction traffic route via the A10 does not pass by the business and there are not anticipated to be traffic delays or restrictions to access. This will give rise to a temporary, medium-term neutral (not significant) effect on the business and its operations.
Additional mitigation	There is no mitigation required in relation to the business.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a temporary, medium-term neutral (not significant) effect on the business and its operations.



Table 1-23 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – Development Land and Businesses

Sensitive receptor	Dragonfly Hotel
Potential effects	The hotel is considered to have a high sensitivity given its reliance on maintaining its character due to the nature of the business, and the fact it is likely to cater to passing trade. The construction works will result in a minor magnitude of impact due to the hotel’s existing setting (proximate to the A10 and Beveridge Way industrial estate) and the fact that access will be maintained and hotel guests are unlikely to experience perceptible changes in terms of the business’ daily functioning and viability as a hotel. This will give rise to a temporary, medium-term slight adverse (not significant) effect on the hotel and its users.
Additional mitigation	There is no mitigation required in relation to the business.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a temporary, medium-term slight adverse (not significant) effect on the hotel and its users.



Table 1-24 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – Development Land and Businesses

Sensitive receptor	King’s Lynn Caravan and Camping Park
Potential effects	The caravan park is considered to have a high sensitivity given its reliance on maintaining its character due to the nature of the business. The construction works will result in a negligible magnitude of impact due to the fact that there will be no disruption to access, the functionality of the business. or its ability to operate. This will give rise to a temporary, medium-term slight adverse (not significant) effect on the Park and its users.
Additional mitigation	There is no mitigation required in relation to the business.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a temporary, medium-term slight adverse (not significant) effect on the Park and its users.

Table 1-25 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – Development Land and Businesses

Sensitive receptor	Yew Cottage B&B
Potential effects	The B&B is considered to have high sensitivity given its reliance on maintaining its character due to the nature of the business. The construction works will result in a negligible magnitude of impact due to the fact that there will be no disruption to access, the functionality of the business. or its ability to operate. This will give rise to a temporary, medium-term slight adverse (not significant) effect on the B&B and its users.



Sensitive receptor	Yew Cottage B&B
Additional mitigation	There is no mitigation required in relation to the business.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a temporary, medium-term slight adverse (not significant) effect on the B&B and its users.

Table 1-26 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – Development Land and Businesses

Sensitive receptor	Hardwick Retail Park and Hardwick Industrial Estate
Potential effects	The businesses at the retail park and industrial estate have a medium sensitivity due to the nature of the premises (warehousing and storage, and retail) and the surrounding industrial character of the area. The construction works will result in a negligible magnitude of impact given that the presence of the Proposed Scheme Boundary and construction traffic routed via the A10 are not anticipated to give rise to perceptible changes to the in terms of the business' ability to operate. This will give rise to a temporary, medium-term neutral (not significant) effect on the retail park and industrial estate and their users.
Additional mitigation	There is no mitigation required in relation to the businesses.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a temporary, medium-term neutral (not significant) effect on the businesses at Hardwick Retail Park and Hardwick Industrial Estate and their users.



Table 1-27 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – Development Land and Businesses

Sensitive receptor	The Warehouse Antique Shop and Restaurant; Norfolk Leisure outdoor furniture warehouse; D&H Direct Agricultural Product Manufacturing; and other businesses including car sales and repair premises; and warehouse, storage, and haulage premises
Potential effects	The businesses have a medium sensitivity due to the nature of the premises (warehousing and storage, and retail) and the surrounding industrial character of the area. The construction works will result in a negligible magnitude of impact, given that the presence of the Proposed Scheme Boundary and construction traffic routed via the A10 are not anticipated to give rise to perceptible changes to the in terms of the business' ability to operate. This will give rise to a temporary, medium-term neutral (not significant) effect on the businesses and their users.
Additional mitigation	There is no mitigation required in relation to the businesses.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a temporary, medium-term neutral (not significant) effect on the businesses and their users.

Land use and accessibility: WCH

1.7.17 There are a number of PRoW in the 1km study area, of which two: North Runcton RB3 (a restricted byway) and North Runcton BR4 (a bridleway) fall within the Proposed Scheme Boundary. The construction phase of the Proposed Scheme is anticipated to result in the permanent diversion of these two PRoWs which will be severed by the Proposed Scheme. The proposed permanent diversion routes have not yet been finalised; however, these are likely to result in an increase in length and subsequent journey time for users in order to safely navigate the WWHARL. If it is not possible to determine a



suitable diversion route which would allow the same (or better) level of accessibility for users, in a worst-case scenario these two PRowS could be permanently stopped up for part of their length.

1.7.18 Given that the other PRowS within the 1km study area are all distant from the Proposed Scheme Boundary, they are not likely to be affected by the construction works or give rise to disruption for users.

Table 1-28 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – WCH routes

Sensitive receptor	North Runcton RB3 and North Runcton BR4
Potential effects	In the absence of mitigation measures, the temporary diversion or stopping up of these PRowS has the potential to increase journey time for users and impact the level of accessibility to these WCH routes. This results in a high sensitivity and moderate magnitude of impact, giving rise to a direct, permanent, long-term moderate adverse (significant) effect on the users of RB3 and BR4.
Additional mitigation	Assuming a ‘worst case’ scenario, both PRowS may be partially stopped up if there is no suitable alternative diversion route. To mitigate this, construction access and temporary diversions will be agreed with the BKLWN Council Rights of Way Officer and controlled through the CEMP. This will set out how closure and diversion of PRow routes will be managed and their impact minimised.
Residual effects and monitoring	Following the management of the potential temporary closure and diversion of these PRowS via the CEMP, the residual magnitude of change would be reduced to minor. Therefore, the Proposed Scheme has the potential to give rise to a direct, permanent, long-term slight adverse (not significant) residual effect on the users of RB3 and BR4.



Table 1-29 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – WCH routes

Sensitive receptor	West Winch FP 2, West Winch FP 3, West Winch FP 4, West Winch RB 1, North Runcton FP 1, North Runcton RB 2, and North Runcton RB 6
Potential effects	These PRowS have medium sensitivity and construction works would result in no change to the magnitude of impact, giving rise to a direct temporary, medium-term neutral (not significant) effect on PRow users.
Additional mitigation	There is no mitigation required in relation to these PRowS.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a temporary, medium-term neutral (not significant) effect on PRow users.

Table 1-30 Assessment of potential effects, additional mitigation, residual effects and monitoring during construction – WCH routes

Sensitive receptor	West Winch FP 6
Potential effects	This PRow has low sensitivity and construction works would result in no change to the magnitude of impact, giving rise to a direct temporary, medium-term neutral (not significant) effect on PRow users.
Additional mitigation	There is no mitigation required in relation to this PRow.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a temporary, medium-term neutral (not significant) effect on PRow users.



Human health

1.7.19 The overall sensitivity of the local population within the 1km study area is deemed to be **medium**, see Section 15.6 for more details. Details on the key receptors within the 1km study area which may experience human health related impacts have been described below, drawing on information within the Air Quality, Noise and Vibration, and Landscape and Visual chapters.

Chapter 6: Air Quality

1.7.20 Chapter 6: Air Quality reports a significant adverse (pre-mitigation) effect on amenity for the 335 residential properties closest to the Proposed Scheme Boundary, and for Sheep's Course Wood. Therefore, air quality effects as a result of construction dust on the most proximate residential dwellings to the Proposed Scheme, and the community land at Sheep's Course Wood have the potential to give rise to a **medium** magnitude of change (in line with IEMA Health Impact Guidance). As such, there is the potential for a **moderate adverse** (significant) effect on human health as a result of construction dust effect, prior to mitigation.

1.7.21 The construction contractor will be required use Best Practicable Means (BMP) to mitigate potential dust impacts, along with requirements set out in the OCEMP. Given that appropriate mitigation relating to Air Quality will be applied during construction, dust impacts on amenity for all residential receptors and users of Sheep's Course Wood are anticipated to be reduced to a negligible residual effect in Chapter 6: Air Quality. This would therefore give rise to a **low** magnitude of change (in line with IEMA Health Impact Guidance) (**Ref. 15.9**). As such, there is likely to be a **minor adverse (not significant)** residual impact on human health receptors as a result of air quality effects, following mitigation.

Chapter 9: Landscape and Visual

1.7.22 Chapter 9: Landscape and Visual reports a significant adverse (pre-mitigation) construction effect on users of Hardwick Narrows, and PRoW North Runcton



RB 3 and North Runcton BR 4 during construction, as a result of visual impacts. It also identifies significant adverse effects for visitors to the Dragonfly Hotel, and residents in properties in West Winch, including: Babingley Place; Willow Drive; Hunters Rise; Mill Lane; Millfield Lane; no's 95-131, 139-163, and 217-221, 331-365 to the east of the A10; 263 Lynn Road; the eastern end of Gravelhill Lane; Long Lane; The Coach House on Rectory Lane; Glendawn, Orchard House, Ivy Cottage, Burwick House, Brook Farm, Field View, no's 42, 44, 48, 50, 55, 57, and 59 Rectory Lane; residents of properties on Coronation Avenue and Freebridge Haven, which have an easterly or southerly aspect; Grange Farm, Grange Farm Bungalow, and The Cottage on Rectory Lane; High Orchard and Manor Farm Estate on Chequers Lane. Construction phase activity will be highly noticeable from these locations, with little or no intervening vegetation to obscure views.

1.7.23 Therefore, visual effects on the most proximate residential dwellings to the Proposed Scheme, the users of the Dragonfly Hotel, and users of PRow North Runcton RB 3 and North Runcton BR 4 have the potential to give rise to a medium magnitude of change (in line with IEMA Health Impact Guidance) (**Ref. 15.9**). As such, there is the potential for a **moderate adverse** (significant) impact on human health as a result of visual effects, prior to mitigation.

1.7.24 There are no construction phase mitigation measures proposed within **Chapter 9: Landscape and Visual** beyond those designed in measures associated with construction compounds and screening. As such, there are no subsequent residual effects identified with the magnitude of change remaining as medium. There is therefore the potential for a **moderate adverse** (**significant**) residual impact on human health as a result of visual effects.

Chapter 10: Noise and Vibration

1.7.25 The only significant adverse construction noise effects (based on projected length of construction duration and proximity to receptors) are anticipated at Brook Farm on Rectory Lane as a result of on-site construction noise during



the daytime. There are no significant vibration effects anticipated during construction. These temporary impacts on a small number of residential receptors have the potential to give rise to a medium magnitude of change for users (in line with IEMA Health Impact Assessment guidance) (**Ref. 15.9**). As such, there is the potential for a **moderate adverse** (significant) impact on human health as a result of noise effects, prior to mitigation.

- 1.7.26 There are no additional mitigation measures proposed within Chapter 10: Noise and Vibration, beyond those designed in measures associated with construction compounds and screening for the property at Brook Farm. As such, as a result of proximity to the Proposed Scheme boundary the magnitude of change will remain as medium for Brook Farm and there is the potential for a **moderate adverse** (significant) residual impact on human health as a result of noise effects.

Operational Phase

Land use and accessibility: Private property

- 1.7.27 Once the Proposed Scheme is operational, the two properties that are to be demolished (Hill Cottages on the eastern side of the A47 at Constitution Hill) will not remain as part of the operational phase. As such, there is no inclusion of Hill Cottages as part of this operational phase assessment.
- 1.7.28 The land allocated within the KLWN Local Plan for development of 4,000 dwellings will no longer be an allocated site, as it will have undergone development to deliver new homes. As such, there is no inclusion of the WWGA land allocation as part of this operational phase assessment; the c.4,000 dwellings within this allocation are considered as part of the cumulative effects section below.
- 1.7.29 There is no disruption anticipated to residents of Frankie Lodge as a result of the Proposed Scheme during the operational phase. All works will be completed and no construction vehicle traffic would remain. Chequers Lane will be physically severed by the Proposed Scheme; however the portion of



Chequers Lane between the A10 and the Proposed Scheme alignment will be unchanged, with no change in the ability for residents to access the property.

1.7.30 There is no disruption anticipated to the following residential dwellings as a result of the Proposed Scheme during the operational phase, as all construction works would be completed and there will be no change in access for residents within these areas. Whilst there is the potential for a slight reduction in traffic on the A10 after the Proposed Scheme is operational, this is unlikely to have a direct impact on residents' ability to access their properties as the A10 will remain a primary circulation route within the locality:

- The estimated c.2,000 dwellings on the west and east sides of the A10;
- The estimated c.300 dwellings in South Lynn;
- The 55-65 properties to the east and west of the A10 at Setchey;
- The five properties in Hardwick and a cluster of properties north of Hardwick Cemetery.

Table 1-31 Assessment of potential effects, additional mitigation, residual effects and monitoring during operation – Private property

Sensitive receptor	Frankie Lodge, Chequers Lane
Potential effects	The property is assessed as having a medium sensitivity due to its proximity to the Proposed Scheme and the stopped up access point on Chequers Lane. The magnitude of impact is considered to be minor , as whilst there will not be through-access along Chequers Lane from the east (travelling from North Runcton), access to Frankie Lodge will remain due to its location within 10m of the A10. Residents will also be able to access the property by road from the east via Setch Road and the A10. This will give rise to a permanent, slight adverse (not significant) effect on the residents at this property.



Sensitive receptor	Frankie Lodge, Chequers Lane
Additional mitigation	There is no mitigation required in relation to this property.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a permanent, slight adverse (not significant) effect on the residents at this property.

Table 1-32 Assessment of potential effects, additional mitigation, residual effects and monitoring during operation – Private property

Sensitive receptor	c.2,000 dwellings to the east and west of the A10, and c.300 dwellings in South Lynn
Potential effects	These properties are assessed as having high sensitivity due to the situation of over 150 dwellings in these locations (as per LA 112 guidance), and the magnitude of impact is considered to be negligible given that there is unlikely to be a perceptible impact on residents' ability to access their properties once the Proposed Scheme is operational. This will give rise to a permanent, neutral (not significant) effect on residents in these locations. Whilst this has the potential to give rise to a slight adverse effect according to the significance matrix, based on past experience and professional judgement, on balance it is not considered likely that a slight adverse impact would arise in the context of the residential areas in question.
Additional mitigation	There is no mitigation required in relation to these properties.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a permanent, neutral (not significant) effect on residents in these locations.



Table 1-33 Assessment of potential effects, additional mitigation, residual effects and monitoring during operation – Private property

Sensitive receptor	Properties in Hardwick, north of Hardwick Road Cemetery, and in Setchey
Potential effects	These properties are assessed as having medium sensitivity due to the situation of less than 50 dwellings in each location (as per LA 112 guidance), and the magnitude of impact is considered to be negligible given that there is unlikely to be a perceptible impact on residents’ ability to access their properties once the Proposed Scheme is operational. This will give rise to a permanent, neutral (not significant) effect on residents in these locations.
Additional mitigation	There is no mitigation required in relation to these properties.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a permanent, neutral (not significant) effect on residents in these locations.

Land use and accessibility: Community land and assets

1.7.31 Once operational, access to and usage of Hardwick Narrows, Sheep’s Course Wood and North Runcton Common is not anticipated to be directly affected by the Proposed Scheme. Similarly, access to and usage of West Winch Primary School and the other community assets including shops, places of worship, sports and recreational facilities which fall within the 1km study area are not anticipated to be directly affected by the Proposed Scheme.

1.7.32 There is likely to be slight disruption to access to North Runcton Scout Hut as Chequers Lane will be physically severed by the Proposed Scheme; preventing access to the Scout Hut from the A10. The Scout Hut will be accessible from the A10 via Setch Road and the eastern alignment of Chequers Lane, and from the A47 via New Road and Common Lane. As such, despite the permanent change to access from the A10, there is not anticipated to be any impact on the overall functionality of the Scout Hut;



existing activities will be able to continue without change or disruption to its users.

Table 1-34 Assessment of potential effects, additional mitigation, residual effects and monitoring during operation – Community land and assets

Sensitive receptor	Hardwick Narrows, Sheep’s Course Wood, and North Runcton Common
Potential effects	These areas of common land are assessed as having a high sensitivity due to their proximity to the Proposed Scheme, their recreational value, and their assumed regular weekly usage. The magnitude of impact is considered to be negligible , as whilst the Proposed Scheme will increase the scale of the highway infrastructure in the locality, this will not be markedly different to the existing situation in terms of the existing access and viability of use of these areas of common land. This will give rise to a permanent, slight adverse (not significant) effect on the land and its users.
Additional mitigation	There is no mitigation required in relation to these areas of common land.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a permanent, slight adverse (not significant) effect on the land and its users.



Table 1-35 Assessment of potential effects, additional mitigation, residual effects and monitoring during operation – Community land and assets

Sensitive receptor	North Runcton Scout Hut
Potential effects	The scout hut is assessed as having high sensitivity due to its proximity to the Proposed Scheme, and the regular use of the facility by a vulnerable group (children). The magnitude of impact is considered to be minor , as whilst there will not be through-access along Chequers Lane from the west, users of the Scout Hut will be able to access the facility via New Road and Common Lane (off the A47) or via the retained eastern portion of Chequers Lane adjoining Setch Road (off the A10) resulting in a negligible change for users in terms of their ability to conduct meetings and activities at the Scout Hut. This will give rise to a permanent, slight adverse (not significant) effect on the users of this facility.
Additional mitigation	There is no mitigation required in relation to the scout hut.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a permanent, slight adverse (not significant) effect on the users of North Runcton Scout Hut.



Table 1-36 Assessment of potential effects, additional mitigation, residual effects and monitoring during operation – Community land and assets

Sensitive receptor	West Winch Primary School
Potential effects	West Winch Primary School is assessed as having very high sensitivity due to its daily usage during term times by a vulnerable group (children) likely by a high proportion of the local community. The magnitude of impact is considered to be negligible as whilst the Proposed Scheme will increase the scale of the highway infrastructure in the locality, it will not be markedly different to the existing situation for users. This will give rise to a slight adverse (not significant) effect on the pupils and teachers at the school.
Additional mitigation	There is no mitigation required in relation to the school.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a permanent, slight adverse (not significant) effect on the pupils and teachers at West Winch Primary School.



Table 1-37 Assessment of potential effects, additional mitigation, residual effects and monitoring during operation – Community land and assets

<p>Sensitive receptor</p>	<p>Other community assets including shops, places of worship, sports and recreational facilities</p>
<p>Potential effects</p>	<p>Community facilities are assessed as having high sensitivity due to their likely daily usage by a reasonable proportion of the local community.</p> <p>The magnitude of impact for facilities in North Runcton (e.g. North Runcton Cricket Club, All Saints Church, and Buttercups Nursery) is considered to be minor as they will have restricted access due to the severance of Chequers Lane and Common Lane by the Proposed Scheme. Whilst there will not be through-access along Chequers Lane and Common Lane from the west, users of these assets will be able to access them via New Road (off the A47) or via Setch Road (off the A10). This will give rise to a slight adverse (not significant) effect on the users of the community facilities in North Runcton.</p> <p>The magnitude of impact for the other community assets within the Study Area would be negligible, with no difference to the quality or viability of these assets or the ability for the local community to use them. This will give rise to a slight adverse (not significant) effect on the users of the other community facilities identified within the Study Area.</p>
<p>Additional mitigation</p>	<p>There is no mitigation required in relation to the community facilities.</p>
<p>Residual effects and monitoring</p>	<p>Given no mitigation is proposed or required, the residual effect remains as a permanent, slight adverse (not significant) effect on the users of the community facilities in North Runcton and a slight adverse (not significant) effect on the users of the other community facilities identified within the Study Area.</p>



Land use and accessibility: Development land and businesses

- 1.7.33 Once operational, it is anticipated that Cool-Stak warehouse may benefit from the Proposed Scheme due to improved access for employees and vehicles. Those employees and vehicles currently accessing Cool-Stak via the A10, A47 or A149 will be able to access the warehouse via the Proposed Scheme, which will offer a direct route bypassing West Winch and North Runcton. Whilst this is not anticipated to notably alter the functionality of the warehouse, it is likely to benefit the business as a whole by improving accessibility for employees and vehicles.
- 1.7.34 The following businesses identified within the 1km study area (the Dragonfly Hotel, Kings Lynn Caravan and Camping Park, Yew Cottage B&B, premises at Hardwick Retail Park and Hardwick Industrial Estate, The Warehouse Antique Shop and Restaurant, Norfolk Leisure outdoor furniture warehouse, and D&H Direct Agricultural Product Manufacturing) are not anticipated to be affected by the operation of the Proposed Scheme. Changes to the businesses' ability to operate and function are not anticipated, and no differences in access via road (by employees and customers) are likely to be perceptible.
- 1.7.35 The other businesses located within the study area are distant from the Proposed Scheme and will not experience any effects during operation as a result of the Proposed Scheme.



Table 1-38 Assessment of potential effects, additional mitigation, residual effects and monitoring during operation – Development land and businesses

Sensitive receptor	Cool Stak
Potential effects	The business is assessed as having a medium sensitivity due to the nature of the premises (warehousing and storage) and the fact it does not cater to passing trade. The operation of the Proposed Scheme would result in a minor magnitude of impact due to the introduction of a direct route bypassing West Winch and North Runcton which may improve access to the business for employees and vehicles. This will give rise to a permanent, slight beneficial (not significant) effect on the business and its operations.
Additional mitigation	There is no mitigation required in relation to the business.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a permanent, slight beneficial (not significant) effect on the business and its operations.

Table 1-39 Assessment of potential effects, additional mitigation, residual effects and monitoring during operation – Development land and businesses

Sensitive receptor	The Dragonfly Hotel, King’s Lynn Caravan and Camping Park, and Yew Cottage B&B
Potential effects	These businesses have a high sensitivity due to the nature of the businesses as accommodation providers and their reliance on maintaining their character in order to attract and retain customers. The operation of the Proposed Scheme would result in no change to the magnitude of impact due to there being no impact on the functionality and operation of the businesses as a result of the Proposed Scheme. This will give rise to a permanent, neutral (not significant) effect on the businesses and their users.



Sensitive receptor	The Dragonfly Hotel, King’s Lynn Caravan and Camping Park, and Yew Cottage B&B
Additional mitigation	There is no mitigation required in relation to the businesses.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a permanent, neutral (not significant) effect on the businesses and their users.

Table 1-40 Assessment of potential effects, additional mitigation, residual effects and monitoring during operation – Development land and businesses

Sensitive receptor	Other businesses including The Warehouse Antique Shop and Restaurant, Norfolk Leisure outdoor furniture warehouse, D&H Direct Agricultural Product Manufacturing, Hardwick Retail Park and Hardwick Industrial Estate, car sales and repair, warehouse, storage, and haulage premises
Potential effects	The businesses have a medium sensitivity due to the nature of the premises and the surrounding character of the area. The operation of the Proposed Scheme would result in no change to the magnitude of impact, due to there being no change to the functionality and operation of the businesses as a result of the Proposed Scheme. This will give rise to a permanent, neutral (not significant) effect on the businesses and their users.
Additional mitigation	There is no mitigation required in relation to the businesses.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a permanent, neutral (not significant) effect on the businesses and their users.

Land use and accessibility: WCH

1.7.36 North Runcton RB3 and North Runcton BR4 sit within the Site Boundary and will require permanent diversion as part of the construction phase. During the operational phase of the Proposed Scheme, the two routes will follow their



new permanent alignments and will not experience any change in functionality or recreational access for users.

1.7.37 The other PRoWs within the 1km study area (West Winch FP 2, West Winch FP 3, West Winch FP 4, West Winch FP 6, West Winch RB 1, North Runcton FP 1, North Runcton RB 2, North Runcton RB 6, Kings Lynn RB 30, and Kings Lynn RB 31) are distant from the Proposed Scheme and are not anticipated to be affected by the operational phase of the Proposed Scheme.

Table 1-41 Assessment of potential effects, additional mitigation, residual effects and monitoring during operation – Walkers, cyclists and horse riders

Sensitive receptor	North Runcton RB3 and North Runcton BR4
Potential effects	These PRoW are assessed as having high sensitivity due to their proximity to the Proposed Scheme and their likely regular use for recreation by the local community. The operation of the Proposed Scheme would result in no change to the magnitude of impact, giving rise to a direct permanent, long-term neutral (not significant) effect on users of RB3 and BR4.
Additional mitigation	There is no mitigation required in relation to these PRoW.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a permanent, long-term neutral (not significant) effect on users of RB3 and BR4.



Table 1-42 Assessment of potential effects, additional mitigation, residual effects and monitoring during operation – Walkers, cyclists and horse riders

Sensitive receptor	West Winch FP 2, West Winch FP 3, West Winch FP 4, West Winch FP 6, West Winch RB 1, North Runcton FP 1, North Runcton RB 2, North Runcton RB 6, Kings Lynn RB 30 and Kings Lynn RB 31
Potential effects	These PRow are assessed as having medium sensitivity given they are distant from the Proposed Scheme and are likely to be regularly used for recreation by the local community. The operation of the Proposed Scheme would result in no change to the magnitude of impact, giving rise to a direct permanent, long-term neutral (not significant) effect on PRow users.
Additional mitigation	There is no mitigation required in relation to these PRow.
Residual effects and monitoring	Given no mitigation is proposed or required, the residual effect remains as a permanent, long-term neutral (not significant) effect on PRow users.

Human Health

1.7.38 The overall sensitivity of the local population within the 1km study area is deemed to be **medium**, see Section 15.6 for more details. Details on the key receptors within the 1km study area which may experience human health related impacts have been described below

Chapter 6: Air Quality

1.7.39 As stated in **Chapter 6: Air Quality**, all impacts associated with human health receptors are considered not significant during operation of the Proposed Scheme. Therefore, air quality effects on the residential properties closest to the Proposed Scheme, and for Sheep’s Course Wood are anticipated to result in a **negligible** magnitude of change (in line with IEMA Health Impact



Guidance). This will therefore result in a **negligible (not significant)** impact on human health receptors as a result of air quality effects, prior to mitigation.

1.7.40 There are no operation phase mitigation measures proposed within **Chapter 6: Air Quality**, as changes in pollutant concentrations are not predicted to exceed standards. As such, there are no subsequent residual effects identified, with the magnitude of change remaining as negligible. There will therefore be a **negligible (not significant)** residual impact on human health receptors as a result of air quality effects.

Chapter 9: Landscape and Visual

1.7.41 **Chapter 9: Landscape and Visual** reports the visual impacts of the Proposed Scheme, with significant adverse visual effects reported for: users of common land at Harwick Narrows and North Runcton Common; WCH routes North Runcton BR4 and North Runcton RB3; and residents in properties in West Winch, including: Babingley Place; Willow Drive; Hunters Rise; Mill Lane; Millfield Lane; no's 95-131, 139-163; 263 Lynn Road; the eastern end of Gravelhill Lane; The Coach House on Rectory Lane; Glendawn, Orchard House, Burwick House, Brook Farm, Field View, no's 42, 44, 48, 50, 55, 57, and 59 Rectory Lane; residents of properties on Coronation Avenue and Freebridge Haven, which have an easterly or southerly aspect; Grange Farm, Grange Farm Bungalow, and The Cottage on Rectory Lane; High Orchard and Manor Farm Estate on Chequers Lane in the first year of the Proposed Scheme's operation. This is due to the Proposed Scheme being highly noticeable from these locations, with little or no intervening vegetation to obscure views. Therefore, visual effects on sensitive receptors are anticipated to result in a **medium** magnitude of change (in line with IEMA Health Impact Guidance). This will therefore result in a **moderate adverse (significant)** effect on human health prior to mitigation.

1.7.42 As stated in **Chapter 9: Landscape and Visual**, proposed mitigation planting will be implemented. Once this has become established and mature (Year 15 of the Proposed Scheme) this is considered to be the residual state of effect.



It is reported that there would remain significant adverse residual effects on some residential receptors, including properties on Mill Lane and Millfield Lane, no's 95-131 east of the A10, the eastern end of Gravelhill Lane; Glendawn, Burwick House, Brook Farm, Field View, no's 42, 44, 48, 50, 55, 57, and 59 Rectory Lane; and Manor Farm Estate on Chequers Lane. Although the mitigation planting will be in place, visual amenity is still anticipated to be affected as views of the Proposed Scheme will be noticeable to some extent. As such, the residual magnitude of change will be **medium** for these properties (in line with IEMA Health Impact Guidance). There will therefore be a **moderate adverse (significant)** residual impact on human health receptors as a result of landscape and visual effects.

Chapter 10: Noise and Vibration

- 1.7.43 **Chapter 10: Noise and Vibration** reports that the Proposed Scheme is expected to result in significant adverse and beneficial impacts on residential receptors in relation to noise-level changes, during operation of the Proposed Scheme. The A10 is expected to carry fewer vehicles once the Proposed Scheme is operational, resulting in a beneficial impact of reduced noise on residential properties located in West Winch along the A10, and community facilities such as the Church of St Mary and West Winch Primary School. However, noise generated from additional traffic using the Proposed Scheme during operation is anticipated to adversely impact some sensitive receptors. These receptors include a residential property located on the A10 where the Proposed Scheme meets the existing road, as well as properties located off Rectory Lane and the North Runcton Scout Hut.
- 1.7.44 Overall, noise effects on sensitive receptors are anticipated to result in a **low** magnitude of change (in line with IEMA Health Impact Guidance). This will therefore result in a **minor adverse to minor beneficial** (not significant) effect on human health dependent on the specific receptor.
- 1.7.45 No additional mitigation measures are recommended in relation to noise effects during operation of the Proposed Scheme, as outlined in **Chapter 10:**



Noise and Vibration. As such, a medium magnitude of change will remain. There will therefore be a **minor adverse to minor beneficial (not significant)** residual effect on human health.

1.8 Cumulative Effects

- 1.8.1 A summary of the cumulative developments surrounding the scheme are identified in **Table 17-1 of Chapter 17: Cumulative Effects**. The development of up to 4,000 dwellings to the east of West Winch is located adjacent to the Proposed Scheme. The development of these homes is dependent on the implementation of the Proposed Scheme to allow for access. There would therefore be no cumulative effect interaction in the construction phase of the Proposed Scheme between these 4,000 dwellings and the Population and Human Health receptors identified.
- 1.8.2 There are two further permitted developments located within 1km of the Proposed Scheme; a retrospective warehouse application adjacent to the southern boundary, and a non-residential light industrial, retail, and sui generis scheme approximately 800m north. Given the nature of these developments and the presence of numerous similar uses in the locality, the construction of the Proposed Scheme is not considered likely to give rise to cumulative effects for the Population and Human Health receptors identified. Given the distance from the Proposed Scheme to the other permitted developments identified is between 1.4km and 4.7km, there are no other cumulative construction phase impacts for Population and Human Health identified.
- 1.8.3 In the operational phase, the only anticipated cumulative effect interaction would be for human health. The associated increase in vehicle movements has been included in the traffic assessment, air quality, and noise assessments which are therefore inherently cumulative in their nature. There are no other operational cumulative effects predicted in relation to human health and the receptors identified in this chapter.



1.9 Opportunities for Environmental Enhancement

1.9.1 The opportunities for environment enhancement for Population and Human Health are as follows:

- Promote the use of local suppliers and contractors where practicable to ensure local people and businesses have the ability to benefit from the Proposed Scheme during the construction phase; and
- Develop opportunities for local people to access training opportunities through working in partnership with key local stakeholders.

1.10 Difficulties and Uncertainties

1.10.1 This chapter has relied, in part, on data provided by third parties (e.g., OS Mapping, Local Authorities, NOMIS) which are the most up-to-date, available at the time of writing. No significant changes or limitations in these datasets have been identified that would affect the robustness of the assessment.

1.11 Summary

1.11.1 **Table 1-8** provides a summary of the findings of the assessment.



Table 1-43 Summary of Population and human health effects during construction phase

Key to table:

P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term, N/A = Not Applicable

Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
Hill Cottages (two dwellings), A47	The demolition of these two properties will require residents to permanently relocate and lose their homes.	Very large adverse (significant) P / D / LT	Mitigation in the form of compensation would be provided by the Applicant to the owner of the properties.	Slight adverse (not significant) P / D / LT	N/A

Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
Frankie Lodge, Chequers Lane	Construction works and the site entrance are proximate to the property and have the potential to create delays due to construction traffic.	Slight adverse (not significant) T / I / MT	No mitigation required.	Slight adverse (not significant) T / I / MT	N/A
c.2,000 dwellings to the east and west of the A10, and c.300 dwellings in South Lynn	Large area of residential dwellings, however limited potential for disruption.	Slight adverse (not significant) T / I / MT	No mitigation required.	Slight adverse (not significant) T / I / MT	N/A



Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
Properties in Hardwick, north of Hardwick Road Cemetery, and in Setchey	Limited potential for disruption.	Neutral (not significant) T / I / MT	No mitigation required.	Neutral (not significant) T / I / MT	N/A
WWGA land allocation	Limited potential for disruption.	Neutral (not significant) T / I / MT	No mitigation required.	Neutral (not significant) T / I / MT	N/A
Hardwick Narrows, Sheep's Course Wood, and North Runcton Common	Limited potential for disruption despite the close proximity of construction works.	Slight adverse (not significant) T / D / MT	No mitigation required.	Slight adverse (not significant) T / D / MT	N/A

Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
North Runcton Scout Hut	Limited potential for disruption despite the close proximity of construction works.	Slight adverse (not significant) T / D / MT	No mitigation required.	Slight adverse (not significant) T / D / MT	N/A
West Winch Primary School	Limited potential for disruption..	Neutral (not significant) T / I / MT	No mitigation required.	Neutral (not significant) T / I / MT	N/A
Other community assets including shops, places of worship, sports and recreational facilities	Limited potential for disruption.	Neutral (not significant) T / I / MT	No mitigation required.	Neutral (not significant) T / I / MT	N/A

Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
Cool Stak	Limited potential for disruption.	Neutral (not significant) T / I / MT	No mitigation required.	Neutral (not significant) T / I / MT	N/A
Dragonfly Hotel	Limited potential for disruption despite the close proximity of construction works.	Slight adverse (not significant) T / D / MT	No mitigation required.	Slight adverse (not significant) T / D / MT	N/A
King's Lynn Caravan and Camping Park	Limited potential for disruption.	Slight adverse (not significant) T / D / MT	No mitigation required.	Slight adverse (not significant) T / D / MT	N/A
Yew Cottage B&B	Limited potential for disruption.	Slight adverse (not significant) T / D / MT	No mitigation required.	Slight adverse (not significant) T / D / MT	N/A



Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
Hardwick Retail Park and Hardwick Industrial Estate	Limited potential for disruption.	Neutral (not significant) T / I / MT	No mitigation required.	Neutral (not significant) T / I / MT	N/A



Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
The Warehouse Antique Shop and Restaurant; Norfolk Leisure outdoor furniture warehouse; and D&H Direct Agricultural Product Manufacturing and other businesses including car sales and repair premises; and warehouse, storage, and haulage premises	Limited potential for disruption.	Neutral (not significant) T / I / MT	No mitigation required.	Neutral (not significant) T / I / MT	N/A



Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
North Runcton RB3 and North Runcton BR4	Construction work is anticipated to result in permanent diversion of these PRowS	Moderate adverse (significant) P / D / LT	Construction access and diversions will be agreed with the BKLWN Council Rights of Way Officer and controlled through the CEMP.	Slight adverse (not significant) P / D / LT	N/A



Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
West Winch FP 2, West Winch FP 3, West Winch FP 4, West Winch FP 6 West Winch RB 1, North Runcton FP 1, North Runcton RB 2, North Runcton RB 6	Limited potential for disruption.	Neutral (not significant) T / D / MT	No mitigation required.	Neutral (not significant) T / D / MT	N/A



Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
Human Health	Air quality impacts on amenity	Moderate adverse	Contractor will use BMP as well as requirements set out in the OCEMP to mitigate dust impacts.	Minor adverse	N/A
Human Health	Visual impacts on amenity	Moderate adverse	No mitigation measures required.	Moderate adverse	N/A
Human Health	Noise impacts on amenity	Moderate adverse	No mitigation measures required.	Moderate adverse	N/A

Table 1-44 Summary of Population and human health effects during operation

Key to table:

P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term, N/A = Not Applicable

Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
Frankie Lodge, Chequers Lane	Limited potential for disruption.	Slight adverse (not significant) P / D / LT	No mitigation required.	Slight adverse (not significant) P / D / LT	N/A
c.2,000 dwellings to the east and west of the A10, and c.300 dwellings in South Lynn	Limited potential for disruption.	Neutral (not significant) P / D / LT	No mitigation required.	Neutral (not significant) P / D / LT	N/A



Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
Properties in Hardwick, north of Hardwick Road Cemetery, and in Setchey	Limited potential for disruption	Neutral (not significant) P / D / LT	No mitigation required.	Neutral (not significant) P / D / LT	N/A
Hardwick Narrows, Sheep's Course Wood, and North Runcton Common	Limited potential for disruption	Slight adverse (not significant) P / D / LT	No mitigation required.	Slight adverse (not significant) P / D / LT	N/A
North Runcton Scout Hut	Slight disruption to access anticipated	Slight adverse (not significant) P / D / LT	No mitigation required.	Slight adverse (not significant) P / D / LT	N/A



Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
West Winch Primary School	Limited potential for disruption	Slight adverse (not significant) P / D / LT	No mitigation required.	Slight adverse (not significant) P / D / LT	N/A
Other community assets including shops, places of worship, sports and recreational facilities	Limited potential for disruption	Slight adverse (not significant) P / D / LT	No mitigation required.	Slight adverse (not significant) P / D / LT	N/A
Cool Stak	Potential for improved access to the business	Slight beneficial (not significant) P / D / LT	No mitigation required.	Slight beneficial (not significant) P / D / LT	N/A

Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
Dragonfly Hotel	No effect on the business is anticipated	Neutral (not significant) P / D / LT	No mitigation required.	Neutral (not significant) P / D / LT	N/A
King's Lynn Caravan and Camping Park	No effect on the business is anticipated	Neutral (not significant) P / D / LT	No mitigation required.	Neutral (not significant) P / D / LT	N/A
Yew Cottage B&B	No effect on the business is anticipated	Neutral (not significant) P / D / LT	No mitigation required.	Neutral (not significant) P / D / LT	N/A
Hardwick Retail Park and Hardwick Industrial Estate	No effects on the businesses are anticipated	Neutral (not significant) P / D / LT	No mitigation required.	Neutral (not significant) P / D / LT	N/A



Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
The Warehouse Antique Shop and Restaurant; Norfolk Leisure outdoor furniture warehouse; and D&H Direct Agricultural Product Manufacturing	No effects on the businesses are anticipated	Neutral (not significant) P / D / LT	No mitigation required.	Neutral (not significant) P / D / LT	N/A



Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
Other businesses including car sales and repair premises; and warehouse, storage, and haulage premises	No effects on the businesses are anticipated	Neutral (not significant) P / D / LT	No mitigation required.	Neutral (not significant) P / D / LT	N/A
North Runcton RB3 and North Runcton BR4	Not anticipated to be affected during operation	Neutral (not significant) P / D / LT	No mitigation required.	Neutral (not significant) P / D / LT	N/A



Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
West Winch FP 2, West Winch FP 3, West Winch FP 4, West Winch FP 6, West Winch RB 1, North Runcton FP 1, North Runcton RB 2, and North Runcton RB 6	Not anticipated to be affected during operation	Neutral (not significant) P / D / LT	No mitigation required.	Neutral (not significant) P / D / LT	N/A
Human Health	Air quality effects on amenity	Negligible	No mitigation required.	Negligible	N/A



Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
Human Health	Visual effects on amenity	Moderate adverse	Proposed mitigation planting as stated in Chapter 9: Landscape and Visual	Moderate adverse	N/A
Human Health	Noise effects on amenity	Minor adverse to minor beneficial	No mitigation required.	Minor adverse to minor beneficial	N/A



1.12 References

- **Reference 15.1:** The Town and Country Planning (Environmental Impact Assessment) Regulations. (2017). Available online at: [Government Legislation](#)
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- **Reference 15.3:** Ministry of Housing, Communities & Local Government. (2023). *National Planning Policy Framework (NPPF)*. Available at: [Government Publications](#)
- **Reference 15.4:** King's Lynn & West Norfolk Borough Council. (2016). *Borough Council of Kings Lynn and West Norfolk Local Development Plan*. Available at: [King's Lynn & West Norfolk Borough Council](#)
- **Reference 15.5:** King's Lynn & West Norfolk Borough Council. (2016). *West Winch Growth Area Strategic Policy*. Available at: [King's Lynn & West Norfolk Borough Council](#)
- **Reference 15.6:** Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government. (2014). *National Planning Practice Guidance, Healthy and Safe Communities*. Available at: [Government Guidance](#)
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- **Reference 15.9:** IEMA. (2022). *Guidance on 'Determining Significance for Human Health in Environmental Impact Assessment*. Available online.



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- **Reference 15.14:** Office for National Statistics. (2023). *NOMIS Labour Market Profile – King's Lynn and West Norfolk*. Available at: [NOMIS Labour Market Profile](#)
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- **Reference 15.18:** King's Lynn & West Norfolk Borough Council. (2023). *West Winch Growth Area Ecology and Biodiversity Assessment*. Available online.
- **Reference 15.19:** World Health Organization. (2023). *Constitution*. Available: [World Health Organisation](#)



- **Reference 15.20:** Office for National Statistics. (2020). *2018-based Subnational Population Projections*. Available at: [Government Statistics](#)