



West Winch Housing Access Road

Environmental Statement - Non- Technical Summary

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Contents

1	Introduction	4
1.2	Environmental Impact Assessment	5
2	The Existing Site	7
3	Description of Proposed Development.....	14
3.2	Drainage Strategy	15
3.3	Lighting Strategy	16
3.4	Biodiversity Strategy.....	16
3.5	Landscape Strategy	17
3.6	Construction	17
4	Reasonable Alternatives Considered	18
4.2	Alternative Development	18
4.3	Alternative Sites	18
4.4	Scheme Design Alternatives.....	18
5	Approach to EIA.....	21
5.1	Overview	21
5.2	Approach to the Assessment.....	22
6	Air Quality	24
6.1	Overview	24
6.2	Receptors	24
6.3	Construction Phase Effects and Mitigation	25
6.4	Operational Phase Effects and Mitigation.....	25
6.5	Residual Effects.....	25
7	Archaeology and Heritage.....	25
7.1	Overview	25
7.2	Receptors	26
7.3	Construction Phase Effects and Mitigation	27
7.4	Operational Phase Effects and Mitigation.....	27
7.5	Residual Effects.....	28
8	Ecology	28
8.1	Overview	28
8.2	Receptors	28
8.3	Construction Phase Impacts and Mitigation	29



8.4	Operational Phase Impacts and Mitigation	30
8.5	Residual Effects.....	30
9	Landscape and Visual Impact	30
9.1	Overview	30
9.2	Receptors.....	30
9.3	Construction Phase Effects and Mitigation	31
9.4	Operational Phase Effects and Mitigation.....	31
9.5	Residual Effects.....	32
10	Noise and Vibration.....	32
10.1	Overview	32
10.2	Receptors.....	32
10.3	Construction Phase Effects and Mitigation	33
10.4	Operational Phase Effects and Mitigation.....	33
10.5	Residual Effects.....	33
11	Water Environment.....	34
11.1	Overview	34
11.2	Receptors.....	34
11.3	Construction Phase Impacts and Mitigation	35
11.4	Operational Phase Impacts and Mitigation.....	35
11.5	Residual Effects.....	35
12	Geology and Soils	35
12.1	Overview	35
12.2	Receptors.....	36
12.3	Construction Phase Effects and Mitigation	36
12.4	Operational Phase Effects and Mitigation.....	37
12.5	Residual Effects.....	38
13	Material Assets and Waste.....	38
13.1	Overview	38
13.2	Receptors.....	38
13.3	Construction Phase Effects and Mitigation	39
13.4	Operational Phase Impacts and Mitigation.....	39
13.5	Residual Effects.....	39
14	Greenhouse Gases	39



14.1 Overview 39

14.2 Receptors 40

14.3 Construction Phase Impacts and Mitigation 40

14.4 Operational Phase Impacts and Mitigation 40

14.5 Residual Effects..... 41

15 Population and Human Health 41

15.1 Overview 41

15.2 Receptors 42

15.3 Construction Phase Impacts and Mitigation 42

15.4 Operational Phase Impacts and Mitigation 42

15.5 Residual Effects..... 42

16 Traffic and Transport 43

16.1 Overview 43

16.2 Receptors 43

16.3 Construction Phase Impacts and Mitigation 43

16.4 Operational Phase Impacts and Mitigation 44

16.5 Residual Effects..... 44

17 Cumulative Effects 44

17.1 Overview 44

17.2 Effect Interactions..... 44

17.3 In-Combination Effects 45

Figures

Figure 1 – Proposed Site Boundary 8

Figure 2 – do minimum, reduced and full options..... 20

Figure 3 - Committed Developments Assessed for In-combination Effects 45



1 Introduction

1.1.1 Norfolk County Council working in partnership with the Borough Council of Kings Lynn and West Norfolk (BCKLWN) (the Applicant) are proposing to submit a planning application for the West Winch Housing Access Road (the Proposed Scheme).



1.1.2 The Proposed Scheme is located between the A47 (northern extent) and the A10 (southern extent), crossing several agricultural land parcels and will provide a link between the A47, to the north, and A10, to the south. The Proposed Scheme is located within land to the east of West Winch village, south of the centre of Kings Lynn, Norfolk.

1.1.3 The planning application will request permission for the development of the following, which together amounts to the 'Proposed Scheme':

- A 3.5km long single carriageway road the east of West Winch connecting the A47 with the existing A10, providing access to proposed housing development;
- Modifications to the existing Hardwick Interchange, plus dualling of the existing A47 between Hardwick Interchange and the housing access road;
- A partially signalised roundabout junction where the housing access road meets the A47;



- A roundabout on the housing access road providing access to the Hardwick Green planned development, plus two roundabout junctions to accommodate connections to further housing development;
- A roundabout at the southern end of the housing access road, providing a connection to the existing A10;
- Treatment of local roads severed by the housing access road including Rectory Lane and Chequers Lane, to maintain east to west access;
- Modifications to the existing A10 to improve safety and repurpose as a local traffic route;
- Drainage basins, landscaping, and connections for non-motorised users;
- Utility diversions, including gas mains;
- Temporary use of land during construction for working areas, site compounds, and storage.

1.2 Environmental Impact Assessment

1.2.1 As part of the planning process, an Environmental Impact Assessment (EIA) must be completed for the Proposed Scheme. The term 'environmental impact assessment' describes a procedure that must be followed for certain types of projects before they can be given 'development consent'. The procedure follows the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations) and is a means of drawing together an assessment of a project's likely significant environmental effects. This helps to ensure that the importance of the predicted effects and the scope for reducing them are properly understood by the public and the relevant competent authority before it makes a planning decision. An Environmental Statement is the written output of the EIA and contains three parts:



- Volume 1: Main Text and Figures;
- Volume 2: Technical Appendices; and
- Volume 3: Non-Technical Summary.

1.2.2 This document is Volume 3: Non-Technical Summary (NTS) of the Environmental Statement and has been prepared using non-technical language. Volumes 1 and 2 of the Environmental Statement can be consulted for more information on any of the topics within this NTS.

1.2.3 The Full EIA Report can be accessed via Norfolk County Council's Planning Portal: [Planning Portal Link](#)

1.2.4 Hard copies can be viewed at the following:

- 1x hard copy available at NCC County Hall – to be viewable by appointment only (Norfolk County Council, County Hall, Martineau Lane, Norwich, Norfolk, NR1 2DH); and
- 1 x hard copy at the Borough Council of King Lynn and West Norfolk (King's Court, Chapel St, King's Lynn PE30 1EX).



1.2.5 The EIA has been prepared by a team of experienced and qualified experts. WSP is responsible for the coordination, compilation and procedural review of the Environmental Statement. WSP is registered under the EIA Quality Mark operated by the Institute of Environmental Management and Assessment (IEMA) which recognises our commitment to excellence in EIA activities.



2 The Existing Site

2.1.1 The Proposed Scheme will be located within land to the east of West Winch village, approximately 2 kilometres (km) south of the centre of Kings Lynn, Norfolk (the Site). The Proposed Scheme is located within the administrative area of Norfolk City Council (NCC) and the Borough Council of King's Lynn and West Norfolk (BCKLWN). The Site is approximately 68.7 hectares (ha) including site compounds. The environmental characteristics of the Site are summarised below. A 1km buffer has been added to Figure 1 as an indicative study area. Study areas differ between different environmental topics and are outlined within each chapter of the Environmental Statement.



Figure 1 – Proposed Site Boundary

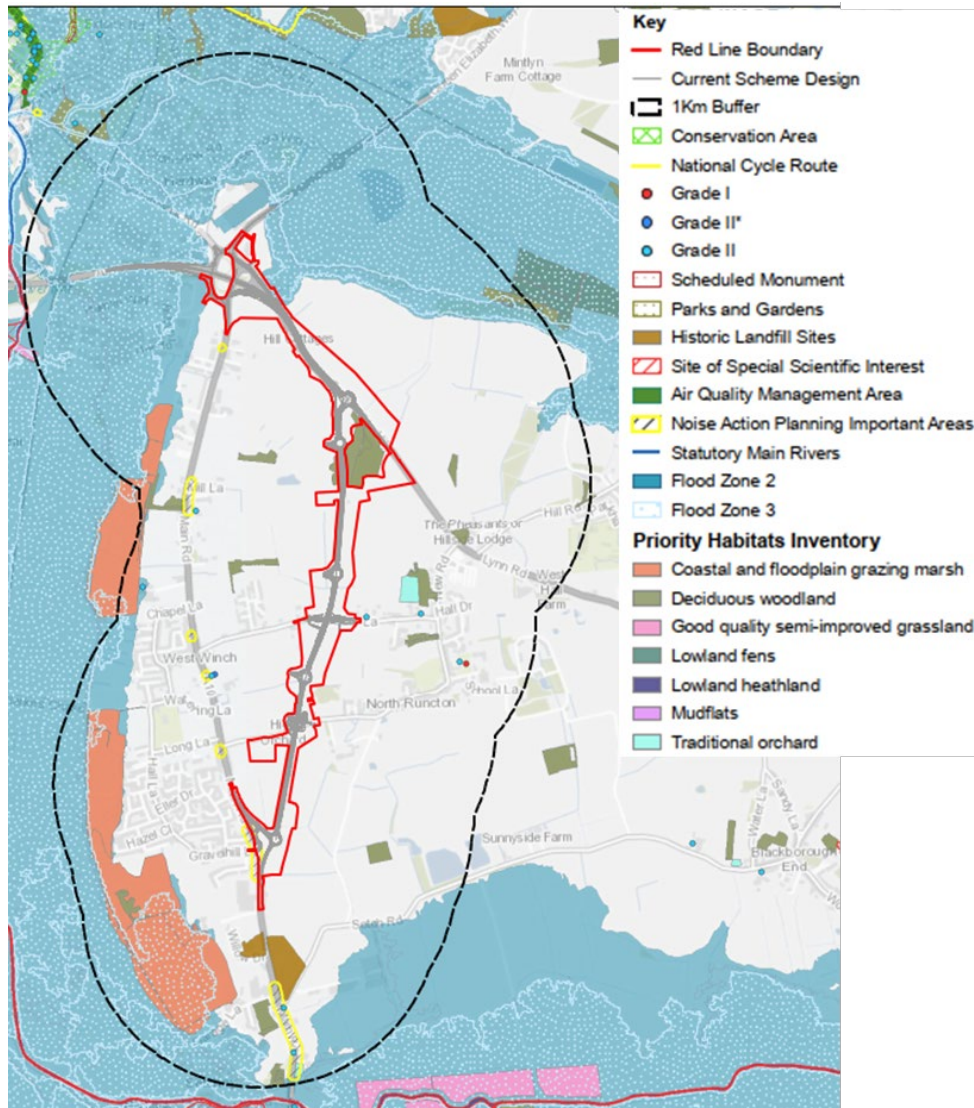


Table NTS-1 – Environmental Characteristics of the Site

Environmental Characteristic	Summary
Ground Conditions	<p>The Site is located predominantly on agricultural land (Grade 2 and 3). The Site is underlain by two low productivity aquifers of limited or local potential, classified as ‘Secondary A’ and ‘Secondary undifferentiated’ aquifers. The Site bedrock comprises the Kimmeridge Clay formation (predominantly mudstone) and Sandringham Sand formation (comprising silty and clayey sands). The Site is not located within a Coal Mining Reporting area and no mining or quarrying records are held within the Site boundary. However, there are a number of areas within the Site boundary of concern with respect to contaminated land.</p>
Archaeology and Heritage	<p>No nationally designated (protected) heritage assets within the Site boundary. There is one Grade II listed building adjacent to the Site. Within the study area there have been nine archaeological excavations. Roman remains have been found at two sites, Medieval remains at one site, post-medieval remains at two sites and either post-medieval or modern remains at another site.</p>

Environmental Characteristic	Summary
Ecology	<p>The Site is located within an area of arable farmland between West Winch and North Runcton. There are semi-natural habitats present in the northeast of the Scheme, comprising woodlands, grasslands and scrub which forms a large expanse of habitat that extends beyond the Scheme Boundary. The arable fields are bounded by drainage ditches, trees and hedgerows. A number of these habitats are priorities for nature conservation. Urban habitats are found along the existing roads including the A10, A47, Chequers Lane and Rectory Lane.</p> <p>The habitats within the Scheme Boundary and surrounding area are suitable for a range of protected species, including species that are a priority for nature conservation such as birds, mammals, reptiles, amphibians, fish and invertebrates.</p> <p>There are also a number of designated sites for nature conservation in proximity to the Proposed Scheme, including County Wildlife Sites, Sites of Special Scientific Interest, Special Protection Areas, Special Areas of Conservation and Ramsar sites. Ancient woodland can also be found in the wider area.</p>

Environmental Characteristic	Summary
Landscape	<p>The landscape within and surrounding the Site is generally flat with very gentle undulation. It lies approximately 10-20m Above Ordnance Datum (AOD). The Site is located in close proximity to the River Nar. The Proposed Scheme is located on predominantly greenfield agricultural land (Grade 2 and 3). There are no landscape designations within the Proposed Scheme. There are a number of infrastructure / industrial elements in the landscape, including the A47 highway and large-scale electricity pylons with overhead wires. There are no Areas of Outstanding Natural Beauty (AONB), National Parks or Country Parks within 5km of the Proposed Scheme. The Proposed Scheme lies within the North West Norfolk National Character Area (NCA76) and the Fens National Character Area (NCA46). The Proposed Scheme is situated within two Landscape Character Areas - G2: Middleton and G4: West Winch.</p>
Air Quality	<p>There are no Air Quality Management Areas (AQMAs) within the Site boundary. The nearest AQMA is the Railway Road AQMA (AQMA ID 138), located approximately 970m to the north. A second AQMA, the Gaywood Clock AQMA (AQMA ID 1493), is located approximately 2.1km to the east of the Proposed Scheme. Both AQMAs were declared for nitrogen dioxide (NO₂).</p>



Environmental Characteristic	Summary
Noise and Vibration	There is one Noise Important Area (NIA) (ID 5191) located within the Proposed Scheme boundary. There are a number of other NIAs (ID 5187, 11358, 5189, 14279, 5190, and 11359) located within A10 West Winch Main Road. There are a number of sensitive receptors located within the study area of the Proposed Scheme, including dwellings, schools, and commercial properties.

Environmental Characteristic	Summary
<p>Water Resources, Flood Risk and Drainage</p>	<p>The Site is located within the North West Norfolk Management Catchment, within the Anglian River Basin District. There are two watercourses located within the study area: the Country Drain and the Middleton Stop Drain. The Proposed Scheme is located within the Country Drain Surface Water Nitrate Vulnerable Zone. There are no statutory main rivers; however, there are two main rivers: the River Nar and the River Great Ouse.</p> <p>There are two Sites of Special Scientific Interest (SSSI) located within the study area; the River Nar and the Setchey. The Sandringham Sand Formation (north of the Proposed Scheme) is classified as High and Medium risk for Groundwater Vulnerability. The Tottenhill Gravel Member and Lowestoft Formation are classified as Medium – Low risk.</p> <p>The Proposed Scheme is not located within a Groundwater Source Protection Zone. There are also no public surface water sewers within the site boundary. The majority of the site is located within Flood Zone 1 and classed as having a Low Probability of flooding. However, a small area located towards the east of Hardwick roundabout, is located within Flood Zone 2 and Flood Zone 3.</p>



3 Description of Proposed Development

3.1.1 The objectives for the Proposed Scheme are outlined below:

- Drive economic growth by supporting housing delivery and employment growth in the region;
- Enhance the A10's role as a strategic link supporting the wider King's Lynn economy;
- Provide a more resilient road network to improve journey time reliability and safety for all users;
- Improve the quality of life of residents of West Winch by reducing the volume of non-local journeys through the village;
- Provide better conditions in West Winch and along the A10 for travel by non-motorised modes; and
- Seek to minimise environmental impacts of intervention.

3.1.2 The Proposed Scheme will provide the following:

- A 3.5km long carriageway to the east of West Winch connecting the A47 with the existing A10, providing access to proposed housing development;
- Modifications to the existing Hardwick Interchange and dualling of the existing A47 between Hardwick Interchange and the housing access road;
- The housing access road will be predominantly single carriageway, with a short section of dual carriageway on the approach to the A47 and feature a total of five roundabouts including;
 - A partially signalised roundabout junction where the housing access road meets the A47;



- A roundabout on the housing access road providing access to the Hardwick Green (i.e. Hopkins Homes) planned development, plus two roundabout junctions to accommodate connections to further housing development;
 - A roundabout at the southern end of the housing access road, providing a connection to the existing A10 with new signalised crossings nearby;
 - Treatment of local roads severed by the housing access road including an overbridge at Rectory Lane to accommodate road and bridleway users, and closure of Chequers Lane where it crosses the scheme with an at-grade signalised crossing, to maintain east to west access;
 - Modifications to the existing A10 to improve safety and support its repurposing as a local traffic route;
 - Construction of drainage features, including basins, and associated maintenance access tracks;
 - Landscaping, and connections for non-motorised users;
 - Utility diversions, including National Grid gas mains;
 - Demolition of Hill Cottages on A47 Constitution Hill; and
- Temporary use of land during construction for working areas, haul routes, site compounds, and storage.

3.2 Drainage Strategy

3.2.1 The Proposed Scheme shall adopt the principles of Sustainable Urban Drainage Systems (SuDS) and follow the drainage hierarchy as set out in CIRIA C753 'The SuDS Manual'. The Site has an existing network of drainage ditches that will be utilised as outfalls. It is envisaged that the storm water generated from the road will be collected by a series of filter drains, gullies and drainage kerbs where it will be discharged to a series of below ground



pipes. Storm water will be collected in a series of basins, which will have an integral sediment reservoir. The SuDS treatment drains will ensure that the drainage system meets the requirement of drainage standards for mitigation of pollutants. A Highways England Water Risk Assessment Tool assessment has been submitted with this planning application to ensure that pollution mitigation requirements are in-line with National Highways requirements for the National Highways element of the development.

3.3 Lighting Strategy

3.3.1 The Street lighting design includes for the A47 and dualled section of the HAR. The only other area to be lit is Chequer's Lane pedestrian crossing with 3 Lighting Columns on either side in order to follow required standards.

3.4 Biodiversity Strategy

3.4.1 The Proposed Scheme includes landscaping that will reduce impacts upon certain species and provide compensatory habitat to reduce the impact of habitat loss. This includes habitat planting to reduce collision risk as well as woodland and hedgerow creation that will contribute to the compensation for the loss of priority habitats. In addition, the Scheme boundary and location of features have been adapted to avoid sensitive areas and reduce habitat loss. The drainage strategy also reduces the potential for pollution during operation. The design of the A47 underpass maintains the connectivity for wildlife, including bats.

3.4.2 Measures to reduce impacts during construction will avoid water-borne pollution and reduce dust pollution during construction. Measures to protect retained trees and habitats are also presented.

3.4.3 Additional mitigation is detailed within an Outline Construction and Environmental Management Plan (oCEMP). This will ensure that impacts on protected species are minimised and implemented during the construction phase. In advance of construction, a licence from Natural England will be



sought for Great Crested Newts and it is anticipated that the District Level Licensing scheme will be used. A Landscape and Ecological Management Plan will be produced to detail design measures as well as ongoing management requirements. An offsite reptile receptor site will also need to be identified and secured in advance of construction to ensure that reptiles are able to be relocated from construction areas.

3.5 Landscape Strategy

3.5.1 The landscape strategy has been designed to deliver greater structural and species diversity than is currently provided by the largely intensive agricultural management that exists within and adjacent to the Proposed Scheme. Trees, hedgerows and woodland have been retained, replaced, protected and enhanced where possible, with a provision of new native tree belts, native hedgerow and native trees added in the area surrounding the Proposed Scheme. A scattered provision of new native trees will also be included, as well as the enhancement of site boundary margins through species rich grasslands.

3.6 Construction

3.6.1 Construction works for the Proposed Scheme are anticipated to start in 2025, and be completed in 2027, with the Proposed Scheme becoming operational in late 2027. The following working hours will be adhered to for the construction of the Proposed Scheme:

3.6.2 For the trunk road works it is anticipated that the standard working hours will be 07:00 – 19:00 during weekdays and 08:00 – 13:00 on Saturdays. No works will be carried out on Sundays, without prior agreement with the Local Planning Authority.

3.6.3 For all other works it is anticipated that normal working hours will be 0700 hours to 1700 hours during weekdays and 08:00 – 13:00 on Saturdays, with night working being used where necessary to avoid unnecessary impacts on



travel routes. No work will be carried out on Sundays, without prior agreement with the Local Planning Authority.

4 Reasonable Alternatives Considered

4.1 Introduction

4.1.1 EIA Regulations 2017 require the EIA Report to include a description of reasonable alternatives studied by the developer and provide an indication of the main reasons for selecting the chosen option.

4.2 Alternative Development

4.2.1 A 'Do-Nothing' scenario was explored for the Proposed Scheme. However, this was discounted given that the site is allocated as a 'strategic urban expansion area' within the BCKLWN Core Strategy (2011) and the Site Allocations and Development Management Policies Plan (2016) (SADMP).

4.3 Alternative Sites

4.3.1 No reasonable alternative sites have been considered as the existing Site was allocated for potential development within the BCKLWN Core Strategy, therefore the Proposed Scheme associated access road to the housing allocation is required at this location. There are no other locations in the King's Lynn area where a housing development of this size could occur, and a single large site is preferred to enable a sustainable new community to be developed. The Proposed Scheme is therefore required at this site to cope with the increase in traffic volumes at the site from the housing allocation.

4.4 Scheme Design Alternatives

4.4.1 The design evolution of the Proposed Scheme including its nature, scale, proposed location, and junction arrangements have been informed by the existing environmental constraints and opportunities within and surrounding



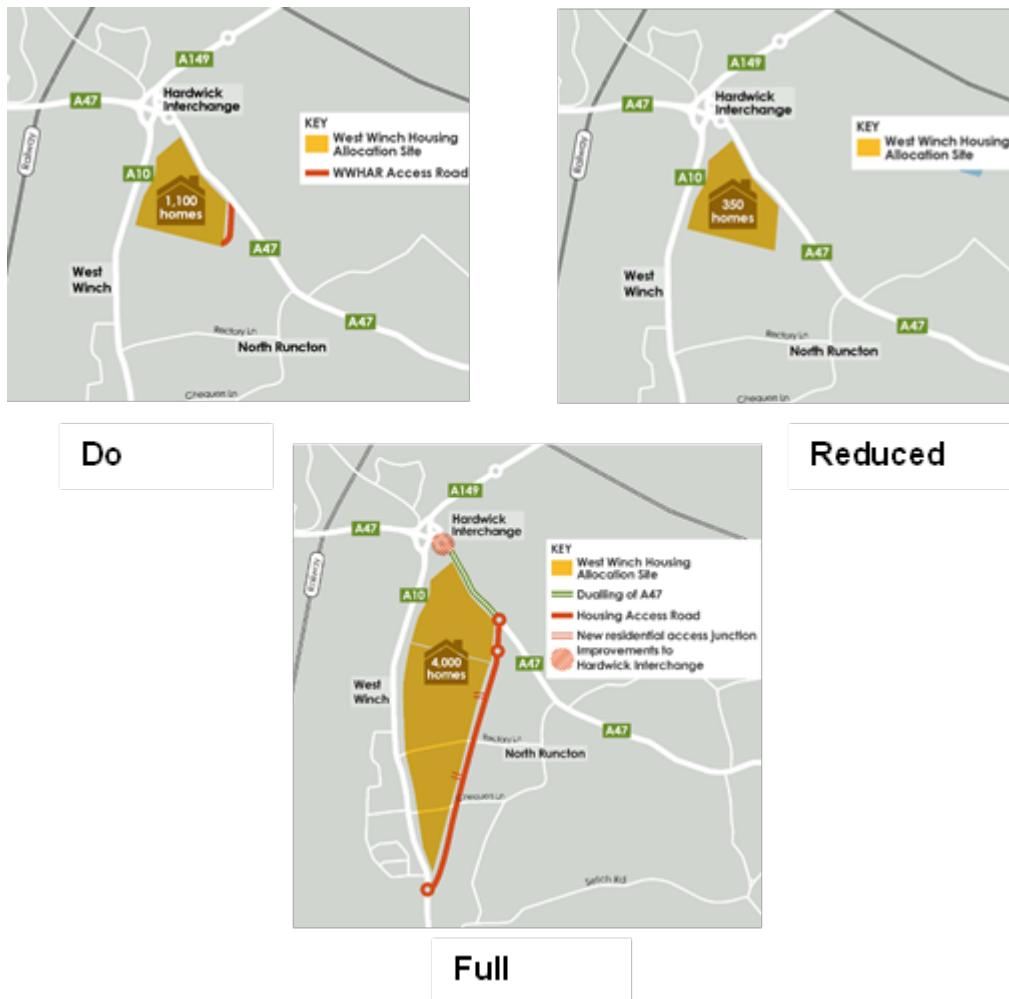
the Site. Several alternative route alignments and junction arrangements have been considered.

4.4.2 The first stage of the option development process considered whether reduced scale options would support delivery of the objectives. The following options were considered:

- Do Minimum: 350 homes proposed with no housing access road provided;
- Reduced Option: 1,100 homes proposed with an access road provided from the A47 solely to the site; and
- Full Option: 4,000 homes proposed with the full Proposed Scheme, which will also provide access to the site.



Figure 2 – do minimum, reduced and full options



4.4.3 This process established that both the Do Minimum and Reduced Options fall short of meeting the scheme’s objectives. Neither of these options provide a full bypass of West Winch, and therefore do not meet the objectives associated with removing through traffic and reducing congestion and improving journey reliability. As a result, the full option was identified as the most appropriate. Following this, detailed optioneering was undertaken in 2019, including the following options:

- 5 different alignments at the northern end of the new housing access road between the A10 and A47;



- 2 different alignments at the southern end of the new housing access road between the A10 and A47; and
- A number of options for junction alterations at the Hardwick A10/A47/A149 junction.

4.4.4 Design evolution has been undertaken since the optioneering in 2019 up to this submission, with updates to design made in consultation with statutory consultees such as National Highways in order to improve Scheme safety and adhere to best practice design guidance.

5 Approach to EIA

5.1 Overview

5.1.1 Under the EIA Regulations 2017, the Proposed Scheme is defined as the type and scale of development that requires an EIA. A scoping stage has been undertaken prior to this assessment stage, which identified which topics were 'scoped in' to be assessed within this Environmental Statement, and agreed by Norfolk County Council and statutory consultees.



5.1.2 In addition to the formal consultation undertaken during the scoping process, technical consultation with statutory and non-statutory consultees has been carried out throughout this assessment, and public consultation has been undertaken.

5.1.3 The EIA considers impacts during both construction and operation of the Proposed Scheme. The assessment of the construction stage considers



temporary activities required for building the Proposed Scheme and their effects on the environment and local community. The assessment of the operational stage looks at the permanent presence of the Proposed Development on the environment and local community.

- 5.1.4 The findings of the EIA are reported in the Environmental Statement which has been submitted to accompany the planning application for the Proposed Development.

5.2 Approach to the Assessment

- 5.2.1 Environmental effects have been assessed using appropriate national and international standards or limits and guidance. In the absence of relevant standards, professional judgement by experienced and suitably qualified technical specialists has been used.
- 5.2.2 The sensitivity of each receptor is assessed, as well as the magnitude of impact on the receptor as a result of the Proposed Development. A matrix is then used to identify the significance of the effects on the receptor. Some technical chapters will use a different matrix and criteria based on the needs of the assessment.
- 5.2.3 For most assessments, effects considered as **Moderate** or **Major** are considered to be significant and those considered as **Minor** or **Negligible** are considered to be not significant.
- 5.2.4 Each effect is given a significance level based on the size of the change due to the Proposed Development and the sensitivity of the affected environmental receptor receiving the change.
- 5.2.5 Residual effects have also been assessed. This shows the likely final effects of the Proposed Development after the mitigation measures to reduce or reverse negative effects, or enhance positive effects, have been taken into account.



5.2.6 The terms used to define environmental effects in the Environmental Statement are as follows:

- Major (beneficial or adverse) effect: where the Proposed Development would cause a substantial improvement or deterioration to the existing environment/receptor;
- Moderate (beneficial or adverse) effect: where the Proposed Development would cause a noticeable improvement or deterioration to the existing environment/receptor;
- Minor (beneficial or adverse) effect: where the Proposed Development would cause a perceptible improvement or deterioration on to the existing environment/receptors; and
- Negligible: where the Proposed Development would result in no discernible improvement or deterioration to the existing environment/receptors.

5.2.7 For most assessments, effects considered as moderate or major are considered to be significant and those considered as minor or negligible are considered to be not significant.

5.2.8 Effects are described as:

- Beneficial or adverse;
- Permanent or temporary;
- Direct or indirect, secondary or transboundary;
- Duration (short, medium or long-term), frequency and reversibility of effect;
- Significant or not significant.

5.2.9 In terms of the duration of an effect, generally the EIA considers that a short-term effect is up to 2 years in duration, a medium-term effect is between 2 and



10 years, and a long-term effect is greater than 10 years in duration. Any variation of this approach is explained in the relevant chapter of the Environmental Statement.

5.2.10 The following sections provide a summary of the likely residual environmental effects arising from the Proposed Development during construction and operation.

6 Air Quality

6.1 Overview

6.1.1 The impact of the Proposed Scheme on air quality has been assessed. The study area for air quality during the construction phase includes all sensitive receptors within 200m of the Site boundary. The study area for air quality during the operational phase includes all sensitive receptors within 200m of roads with substantial increases in traffic as a result of the Scheme.

6.2 Receptors

6.2.1 There are 335 human receptors, comprising residential properties only, within the construction phase Study Area.

6.2.2 A total of 58 representative human receptors were included in the assessment for the operational phase. These are generally representative of locations where changes in traffic, and therefore change in air quality, are likely to be greatest.

6.2.3 There are six designated habitats and four veteran trees within the operational phase study area that are sensitive to changes in air quality. These comprise:

- Reffley Wood Ancient Wood;
- Rush Meadow County Wildlife Site;
- West Winch Common County Wildlife Site;



- Sheep's Course Wood County Wildlife Site;
- Saddlebow Reedbeds County Wildlife Site;
- Brook Watering Meadow County Wildlife Site; and
- Four Veteran Trees (IDs 11903, 11884, 11882, 11879).

6.3 Construction Phase Effects and Mitigation

6.3.1 An assessment of construction phase dust impacts was undertaken for the Proposed Scheme. With the implementation of standard construction mitigation, the effects of changes in air quality on receptors are not significant. No additional mitigation is required.

6.4 Operational Phase Effects and Mitigation

6.4.1 An assessment of operational phase impacts was undertaken for the Proposed Scheme. At all of the receptors in every modelled scenario, there was no exceedance of the respective NO₂, PM₁₀ or PM_{2.5} annual mean objectives. Therefore, the operational phase air quality effects are not significant. No additional mitigation is required.

6.5 Residual Effects

6.5.1 Following the implementation of embedded mitigation, all construction phase effects on air quality at human receptors are negligible and not significant.

6.5.2 No significant effects on air quality are predicted at human receptors for the operational phase. The residual effects are negligible and not significant.

7 Archaeology and Heritage

7.1 Overview

7.1.1 The impact of the Proposed Scheme on built heritage assets and archaeological remains has been assessed. Built heritage can include listed



buildings, conservation areas, registered parks and gardens and locally listed buildings. The study area for built heritage assets has been set at 1km from the Site boundary. The Site has a potential to contain archaeological remains from the prehistoric, Roman, early-medieval, medieval and post-medieval periods. An assessment of operational phase effects on archaeological remains has been scoped out on the basis that once the Proposed Scheme has been completed, no further ground disturbance would occur. The construction phase effects for built heritage were scoped out due to their temporary nature.

7.2 Receptors

7.2.1 There are 15 built heritage assets within the study area. Of these, five are scoped out of the assessment due to the distance of the asset from the Site boundary; the asset's location, scale and orientation, and the nature, extent and scale of intervening built form, vegetation and topography between asset and the Site boundary. Eight built heritage assets are scoped into the assessment and these are listed below:

- 18th Century Milestone (non-designated);
- Church of All Saints (listed Grade I);
- Church of St Mary (listed Grade II*);
- The Old Rectory (listed Grade II);
- North Runcton Lodge (listed Grade II);
- North Runcton War Memorial (listed Grade II);
- The Mill at TF 6314 1678 (listed Grade II); and
- Medieval moated enclosure within site of Fincham Manor (considered equivalent to a scheduled monument).

7.2.2 The following archaeological receptors have been assessed:



- Prehistoric remains;
- Roman remains;
- Early medieval (Saxon) remains;
- Medieval remains; and
- Post-medieval remains.

7.3 Construction Phase Effects and Mitigation

7.3.1 An assessment of construction phase effects was only undertaken for archaeological remains as this assessment was scoped out for built heritage. This assessment identified **Moderate adverse** effects on archaeological features identified during trial trenching in 2014 before mitigation, which is significant in EIA terms. **Slight adverse** effects were identified on all other receptors prior to mitigation, which is not significant in EIA terms.

7.3.2 Following the determination of the planning application, a field evaluation will be undertaken to determine a programme of mitigation if required.

7.4 Operational Phase Effects and Mitigation

7.4.1 An assessment of operational phase effects was only undertaken for built heritage as this assessment was scoped out for archaeological remains. This assessment identified **Moderate adverse** effects on the Old Rectory (Grade II Listed) as the overpass on Rectory Lane would change the way in which the Old Rectory is experienced in terms of journeys to and from the building, along Rectory Lane, and would also change the asset's wider rural setting as well as the rural village character of North Runcton in general. This is significant in EIA terms. **Slight adverse** effects were identified on all other receptors prior to mitigation, which is not significant in EIA terms.

7.4.2 Due to the nature of the effects, no additional mitigation is proposed.



7.5 Residual Effects

- 7.5.1 Following the implementation of mitigation, all construction phase effects on archaeological remains are **Negligible**, which is not significant in EIA terms.
- 7.5.2 As no operational stage mitigation is proposed, the residual effects in built heritage remain as above, only significant (**Moderate adverse**) for the Old Rectory which is significant in EIA terms.

8 Ecology

8.1 Overview

- 8.1.1 The assessment of the Proposed Scheme on features such as protected species and habitats has been assessed through an Ecological Impact Assessment (EclA). A Biodiversity Net Gain (BNG) Assessment has also been completed for the Proposed Scheme. The assessment uses Ecological Zones of Influence to identify receptors likely to be impacted by the Proposed Scheme. A range of desk studies and field surveys have been undertaken to inform the EclA.

8.2 Receptors

- 8.2.1 There are a number of receptors located within the study area, including designated sites, habitats and species.
- 8.2.2 There are 7 internationally designated sites and 7 nationally designated sites within the study area. There are also 10 non-statutory designated sites within the study area. These sites include Special Areas of Conservation (SAC), Ramsar, Special Protection Areas (SPA), Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), and County Wildlife Sites (CWS).
- 8.2.3 There are a number of terrestrial habitats present within the study area, including ancient woodland, hedgerows, ancient and veteran trees, freshwater



aquatic habitats, and a number of UK habitat classification and National Vegetation classification areas.

8.2.4 There are also a number of protected and notable species present within the study area, including:

- Aquatic features;
- Birds;
- Terrestrial invertebrates;
- Mammals;
- Reptiles; and
- Amphibians.

8.3 Construction Phase Impacts and Mitigation

8.3.1 There are no predicted impacts on any internationally and nationally designated sites as a result of the Proposed Scheme. There is potential for dust pollution to affect non-statutory designated sites. Following the implementation of mitigation, there are **Significant** effects anticipated for Sheep's Course Wood CWS. All other designated sites are not anticipated to be affected by the Proposed Scheme.

8.3.2 There is potential for **Significant** effects on terrestrial habitats as a result of habitat loss through construction.

8.3.3 There is potential for a variety of effects on species depending on the receptor. The assessment identifies **Significant** effects, as well as **negligible** effects upon species within the study area.



8.4 Operational Phase Impacts and Mitigation

8.4.1 Following the implementation of embedded mitigation, Sheep's Course Wood is anticipated to have **Significant** effects from air pollution. No other effects are anticipated for other nationally, internationally, or non-designated sites.

8.4.2 There is potential for air pollution to affect habitats within the study area. However, these effects are considered **Not Significant**.

8.4.3 There is potential for a variety of effects on species depending on the receptor. The assessment identifies **Significant** effects upon species within the study area.

8.5 Residual Effects

8.5.1 Following the implementation of embedded mitigation, all construction phase effects on ecological receptors are **negligible** and not significant.

8.5.2 For the operational phase, following embedded mitigation, significant effects remain for Sheep's Course Wood and bats.

9 Landscape and Visual Impact

9.1 Overview

9.1.1 The impact of the Proposed Scheme on Landscape and Visual has been assessed through a Landscape and Visual Impact Assessment (LVIA). The study area for the LVIA during both the construction and operational phase includes all sensitive receptors within 2km of the Scheme boundary.

9.2 Receptors

9.2.1 There are four landscape receptors, comprising local character areas (LCA) only, within the study area. These are:

- LCA E2 – Saddlebow and Wormegay
- LCA G1 – Bawsey and Leziate



- LCA G2 - Middleton
- LCA G4 – West Winch

9.2.2 There are a total of 86 visual receptors, comprising long distance routes, users of Countryside Rights of Way (CRoW) and Common Land, Public Rights of Way (PRoW) (footpaths, bridleways, and byways), cycle routes, highways, residential, leisure and business.

9.3 Construction Phase Effects and Mitigation

9.3.1 An assessment of construction phase landscape impacts was undertaken for the Proposed Scheme. With embedded mitigation, the effects of the construction phase on landscape are not significant for LCA E2, or LCA G1. The effects of the construction phase is considered significant on LCA G2 and LCA G4, although these effects are temporary.

9.3.2 For visual receptors, with embedded mitigation, the effects of the construction phase are not significant for all long distance routes, footpaths, highways, of businesses. No additional mitigation is required. For CRoW land and common land, bridleways, byways, residential and leisure, there are a number of receptors where significant effects from construction are identified. The assessment identifies **Major / Moderate / Major-Moderate** effects on these receptors.

9.4 Operational Phase Effects and Mitigation

9.4.1 An assessment of operational phase impacts was undertaken for the Proposed Scheme. For all LCA's all operational phase landscape effects are not significant. No additional mitigation is required.

9.4.2 For visual receptors, with embedded mitigation, the effects of the operational phase are not significant for all long distance routes, CRoW land and common land, footpaths, highways, leisure, and businesses. No additional mitigation is required. For, bridleways, byways, and residential there are a number of



receptors where significant effects from construction are identified. The assessment identifies **Major / Moderate / Major-Moderate** effects on these receptors.

9.5 Residual Effects

9.5.1 Following the implementation of embedded mitigation, all construction phase effects on landscape and visual receptors are negligible and not significant.

9.5.2 For the operational phase, following embedded mitigation, significant effects remain for 1 PRow and 11 residential receptors.

10 Noise and Vibration

10.1 Overview

10.1.1 The impact of the Proposed Scheme on noise and vibration has been assessed. The study area for the construction phase noise and vibration study area includes human receptors in the vicinity of the construction works with the potential to experience significant adverse effects.

10.1.2 The operational noise study area includes human receptors within 600m of the Proposed Scheme carriageway and the A10 between the Proposed Scheme extents as well as those along roads which are expected to experience a change in noise level that could result in a significant effect.

10.2 Receptors

10.2.1 For the construction phase, 8 receptors are identified. These are numbered C1 to C8 within **Chapter 10: Noise and Vibration**. All 8 receptors are considered for the assessment of construction noise. For construction vibration, only one receptor is identified, C8.

10.2.2 For the operational phase, the following sensitive receptors have been assessed:



- 1366 residential receptors; and
- 14 non-residential receptors.

10.3 Construction Phase Effects and Mitigation

10.3.1 There is the potential for significant adverse effects resulting from construction noise and vibration. As such mitigation measures have been incorporated into the Proposed Scheme, where possible, to avoid or reduce those potential impacts. Measures to reduce and minimise noise and vibration levels from on-site works as far as possible will be adopted during construction. These measures are outlined in the oCEMP.

10.4 Operational Phase Effects and Mitigation

10.4.1 There is the potential for significant adverse effects resulting from operational road traffic noise. As such mitigation measures have been incorporated into the Proposed Scheme, where possible, to avoid or reduce those potential impacts. The Proposed Scheme alignment is designed to avoid passing close to noise sensitive properties wherever possible.

10.5 Residual Effects

10.5.1 Significant adverse construction noise effects are anticipated at receptor groups in the vicinity of East Anglia House and Brook Farm. No significant adverse construction vibration effects or construction traffic noise effects are anticipated as a result of the Proposed Scheme.

10.5.2 A noise model was used to determine the operational noise impacts, both in terms of absolute levels and noise level changes for both the short and long-term. Three hundred and fourteen residential properties are anticipated to experience significant beneficial effects as a result of reduced traffic flows on the A10.

10.5.3 Sixteen residential properties are anticipated to experience significant adverse effects as a result of road traffic noise from the Proposed Scheme directly and



increases in traffic on surrounding existing roads. Significant beneficial and adverse effects are anticipated for homes and businesses fronting some existing roads which will experience road traffic noise changes as a result of the Proposed Scheme.

11 Water Environment

11.1 Overview

11.1.1 The impact of the Proposed Scheme on the water environment has been assessed.

11.1.2 The study area for direct effects encompasses surface water features, groundwater features and groundwater abstractions, and flood risk is up to 1km from the Site. The study area also includes indirect effects upon surface water features that have hydraulic connectivity with features within 1km from the Site. This includes downstream receptors within approximately 5km.

11.2 Receptors

11.2.1 For the construction and operational phases, 10 receptors have been identified:

- Unnamed Field Drains;
- The Country Drain;
- Middleton Stop Drain;
- River Nar;
- Surface Water Abstractions;
- Principal bedrock aquifer (Sandringham Sands);
- Bedrock Secondary Aquifer – Lowestoft Formation;
- Superficial deposits;



- Third party flood risk; and
- Flood risk to the Proposed Scheme.

11.3 Construction Phase Impacts and Mitigation

11.3.1 There is potential for significant effects resulting from changes to groundwater quality. As such, mitigation measures have been incorporated into the Proposed Scheme where applicable to avoid or reduce these impacts.

11.4 Operational Phase Impacts and Mitigation

11.4.1 There is the potential for significant adverse effects resulting from operational increases in contamination of groundwater and major spillages of contamination. As such mitigation measures have been incorporated into the Proposed Scheme, where possible, to avoid or reduce those potential impacts. The Proposed Scheme has included filtration within the surface water drainage system to filter out the physical and chemical contaminants. Also, ensuring that spillages can be contained prior to discharging to the receiving watercourses.

11.5 Residual Effects

11.5.1 Following the implementation of mitigation, no significant adverse construction or operation effects or are anticipated on water receptors as a result of the Proposed Scheme.

12 Geology and Soils

12.1 Overview

12.1.1 The geology and soils assessment has considered the potential contamination impacts associated with the construction and operational stages of the Proposed Scheme. During construction works, construction workers, site users / adjacent site users and off-site land uses could come into contact with contaminated soils, dust, vapours, ground gas, ground water and



sediment. Existing contamination could be mobilised construction, adversely affecting groundwater and surface water.

12.1.2 Due to construction and development works there will be a loss of greater than 20 hectares (ha) of land classed as 'Best Most Versatile Land'.

12.2 Receptors

12.2.1 The following construction phase receptors have been assessed:

- The human health of the construction workers, current and adjacent users of the Site;
- Controlled waters (groundwater secondary (A) and principal aquifers, surface waters, ponds and small streams);
- Below ground services (potable water supply pipes, buried concrete and foundations); and
- Agricultural land.

12.2.2 The following operational phase receptors have been assessed:

- The human health of the maintenance workers, future users and future adjacent users of the Proposed Scheme; and
- Controlled waters (groundwater secondary (A) and principal aquifers, surface waters, ponds and small streams).

12.3 Construction Phase Effects and Mitigation

12.3.1 The assessment identifies **Large adverse** effects on agricultural land prior to mitigation due to the potential for loss of over 20 hectares of Best Most Versatile Land (Grade 2 and Grade 3a). This is significant in EIA terms. An agricultural assessment is proposed to mitigate this effect.

12.3.2 The assessment identifies **Moderate to Large adverse** effects on the human health of the construction workers, current and adjacent users of the Site prior



to implementation of mitigation, from contaminated soils, groundwater, particulate matter, dust vapours and ground gases. This is significant in EIA terms. A materials management plan, ground investigation, Generic Quantitative Risk Assessment, remediation and validation works are proposed to mitigate these effects.

12.3.3 The assessment identifies **Moderate to Large adverse** effects on controlled waters due to the disturbance / mobilisation of contaminated materials and the impact of spills on controlled waters. This is significant in EIA terms. A ground investigation and piling risk assessment are proposed to mitigate these effects.

12.3.4 The assessment identifies **Moderate adverse** effects on below ground services due to exposure to contaminated soil and / or groundwater and deterioration of concrete due to aggressive ground. This is significant in EIA terms. A ground investigation, using potable water supply pipes in accordance with UK Water Industry Research, and using appropriate concrete in accordance with BRE are proposed to mitigate these effects.

12.4 Operational Phase Effects and Mitigation

12.4.1 The assessment identifies **Moderate to Large adverse** effects on the human health of the maintenance workers, future users and future adjacent users of the Proposed Scheme, due to the impact on the health of maintenance workers, future site users and adjacent site uses from contaminated soils, groundwater, particulate matter, asbestos, dust vapours, and ground gases. This is significant in EIA terms. Remediation and evaluation works are proposed to mitigate these effects.

12.4.2 The assessment identifies **Moderate to Large adverse** effects on controlled waters due to the impact of the disturbance / mobilisation of contaminated materials. This is significant in EIA terms. Remediation and evaluation works are proposed to mitigate these effects.



12.5 Residual Effects

12.5.1 Following the implementation of the mitigation described above, all construction phase effects are reduced to non-significant, except effects on agricultural land which remains **Large adverse**. All operational phase effects are reduced to non-significant following the implementation of mitigation.

13 Material Assets and Waste

13.1 Overview

13.1.1 The material assets and waste assessment considers the potential effects of the Proposed Scheme on material resources and landfill void capacity in the region. Desktop research suggests that key construction materials resources for the region are generally sufficient. The Proposed Scheme passes over and is adjacent to Mineral Safeguarding Areas, although these are partially sterilised by existing development. The region has adequate facilities to allow waste to be diverted from landfill (through recycling, recovery, treatment or transfer).

13.1.2 Landfill void capacity within the region is classed as a sensitive receptor with forecasts suggesting that at the end of the construction year, inert landfill void capacity will be in the region of 16.7million cubic meters (mm^3) and non-inert (non-hazardous and hazardous waste) landfill void capacity at 2.3mm^3 .

13.2 Receptors

13.2.1 The receptors identified within this assessment include:

- Material resources: assessing the depletion of material resources and sterilisation of Mineral Safeguarding Areas; and
- Landfill void capacity: assessing the reduction in regional or national landfill void capacity.



13.3 Construction Phase Effects and Mitigation

13.3.1 The assessment identified **Large adverse** effects on landfill void capacity prior to mitigation due to the potential of the Proposed Scheme to deplete this capacity. This is considered significant in EIA terms. To mitigate this significant effect, The Principal Contractor will be required to produce a Site Waste Management Plan, Material Management Plan and adhere to a non-hazardous material recovery target of at least 90%.

13.3.2 **Slight adverse** effects on mineral resources are anticipated as a result of the Proposed Scheme, which is not considered significant in EIA terms.

13.4 Operational Phase Impacts and Mitigation

13.4.1 An assessment of operational phase effects has been scoped out as the quantity of waste generated during the operational phase (e.g. routine maintenance and repairs) is considered negligible.

13.5 Residual Effects

13.5.1 After the implementation of mitigation, the residual effects on landfill void capacity are reduced to **Slight adverse**, which is not significant in EIA terms.

14 Greenhouse Gases

14.1 Overview

14.1.1 The impact of the Proposed Scheme on greenhouse gases has been assessed. The study area for the GHG assessment is not restricted by geographical area but instead includes any increase or decrease in emissions as a result of the Proposed Scheme, wherever they occur. This includes:

- Construction emissions – from the Proposed Scheme footprint, but also related to the transport of materials to and from the Site and their manufacture (this may be distant from the Proposed Scheme location, for example emissions from the manufacture of steel); and



- Operational emissions – (increase or reduction) which result from the end-use of the Proposed Scheme. Such emissions include those for traffic using the Proposed Scheme as well as the surrounding regional road network to gain access – within which traffic flows may be affected.

14.2 Receptors

14.2.1 The impacts of GHGs relate to their contribution to global warming and climate change. These impacts are global and cumulative in nature, with every tonne of GHGs contributing to impacts on natural and human systems. GHG emissions result in the same global effects wherever and whenever they occur. Therefore, the sensitivity of different human and natural receptors is not considered in this assessment.

14.3 Construction Phase Impacts and Mitigation

14.3.1 The impact of construction of the Proposed Scheme on GHG emissions is expected to be moderate adverse (significant).

14.3.2 Mitigation measures are recommended which have the potential to reduce the increase in emissions which will occur as a result of the Proposed Scheme. Whilst the application of the mitigation measures would reduce GHG emissions it would not alter the significance of effects.

14.4 Operational Phase Impacts and Mitigation

14.4.1 The impact of the operation phase of the Proposed Scheme is expected to be moderate adverse (significant), due to an increase in greenhouse gas emissions.

14.4.2 Mitigation measures are recommended which have the potential to reduce the reduce in emissions which will occur as a result of the Proposed Scheme. Whilst the application of the mitigation measures would reduce GHG emissions it would not alter the significance of effects.



14.5 Residual Effects

14.5.1 For the construction phase, the total GHG emissions arising from the embodied carbon, transportation of materials to site, transport of waste from site, construction plant use and habitat loss are estimated to be 29,916 tCO_{2e}, which represents 0.0015% of the fourth carbon budget. Due to high construction emissions, there is still likely to be **moderate adverse (significant)** residual GHG emissions after mitigation measures have been implemented. If the PAS 2080: 2023 Carbon Management Process is followed, and all of the mitigation measures detailed in Table 1.9 of the Carbon Management Plan are implemented as part of the scheme design and contractor requirements, this has the potential to reduce the impact of the construction phase of the Proposed Scheme to **Minor Adverse (not significant)**.

14.5.2 For the operational phase, the net GHG emissions arising from land use change, end user traffic and replacement from the operation of the Proposed Scheme are estimated to be approximately 25,298 tCO_{2e}. Total emissions from the Proposed Scheme (construction and net operational emissions) are estimated to be 54,924 tCO_{2e}. There is still likely to be **moderate adverse (significant)** residual GHG emissions after mitigation measures have been implemented.

15 Population and Human Health

15.1 Overview

15.1.1 The impact of the Proposed Scheme on population and human health has been assessed. The study area for the assessment includes a 1km area for land use and accessibility (non-human health) elements of an assessment and human health elements. A desk based study has been undertaken to inform the assessment.



15.2 Receptors

15.2.1 The receptors identified within this assessment include:

- Private property and housing;
- Community land and assets;
- Development land and businesses;
- Walkers, cyclists and horse riders; and
- Human health.

15.3 Construction Phase Impacts and Mitigation

15.3.1 During the construction phase, there are anticipated to be significant effects upon the Hill Cottages as a result of their demolition. All other land use and accessibility receptors result in not significant effects during the construction phase.

15.3.2 There are anticipated to be significant effects on some receptors which are resulting from dust and noise from construction, and as a result of visual effects.

15.4 Operational Phase Impacts and Mitigation

15.4.1 During operation, effects on all land use and accessibility receptors are considered to be not significant. There are anticipated to be significant effects arising from visual impacts on the some receptors.

15.5 Residual Effects

15.5.1 As a result of embedded mitigation, the impact of construction phase is reduced to not significant for all land use and accessibility receptors. However, there are anticipated significant residual effects arising from the construction on the scheme on local receptors.



15.5.2 Embedded mitigation results in operational effects that are considered not significant on land use and accessibility receptors. However, there are significant effects anticipated on the receptors due to visual effects of the scheme.

16 Traffic and Transport

16.1 Overview

16.1.1 The impact of the Proposed Scheme on traffic and transport has been assessed using strategic transport modelling. The study area encompasses key traffic routes surrounding the Proposed Scheme.

16.2 Receptors

16.2.1 There are a number of sensitive traffic and transport receptors, namely users of the following routes:

- Primary road junctions on A47 (west of Hardwick Interchange);
- A149 Queen Elizabeth Way (north of Hardwick Interchange);
- A47 Constitution Hill (east of Hardwick Interchange);
- A10 Lynn Road (South of Hardwick Interchange);
- A149 Hardwick Road (North west of Hardwick Interchange);
- Local roads within West Winch and North Runcton (Chequers Lane, Rectory Lane, Setch Road); and
- A10 through West Winch continuing south to its junction with A134 at the north edge of Watlington.

16.3 Construction Phase Impacts and Mitigation

16.3.1 During construction, effects are anticipated as a result of construction traffic, however these effects are considered not significant.



16.4 Operational Phase Impacts and Mitigation

16.4.1 With embedded mitigation, the majority of receptors experience not significant effects. The future year assessment with the housing scheme however shows additional traffic on the network resulting in a permanent **moderate** adverse effect on severance and pedestrian and cycle amenity on Long Lane which is **significant**.

16.5 Residual Effects

16.5.1 It is anticipated that the Proposed Scheme will see no significant residual effects. The Proposed Scheme will redistribute trips within the area; following additional mitigation, effects are considered not significant.

17 Cumulative Effects

17.1 Overview

17.1.1 Cumulative effects comprise the combined effects of reasonably foreseeable changes in an area over a certain period of time, which can be both direct and indirect. For the purposes of this EIA Report, the following types of cumulative effects have been considered in accordance with the EIA Regulations 2017 and best practice guidance:

- Effect interactions – the interaction and combination of different environmental effects from within the Proposed Development affecting a receptor; and
- In-combination effects – the combined effects of the Proposed Development and other projects on a receptor.

17.2 Effect Interactions

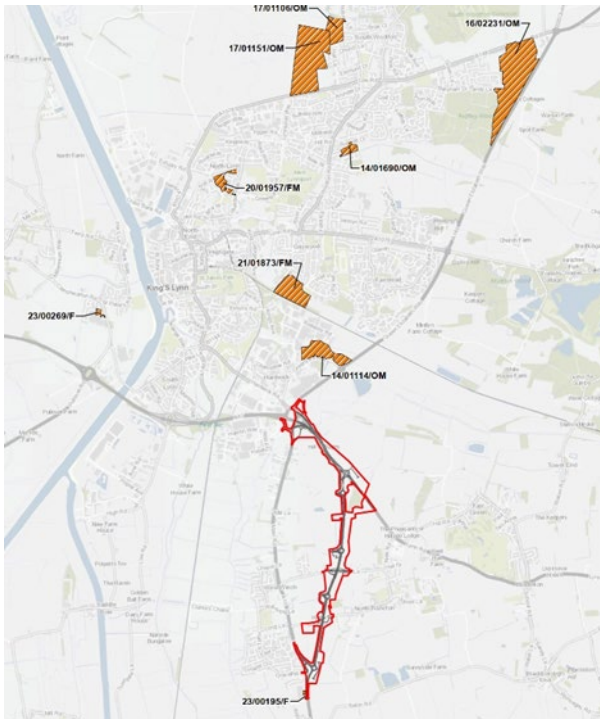
17.2.1 The assessment of effect interactions of construction and operational stages has concluded that the mitigation described in the assessments within the EIA Report is sufficient and no additional mitigation is required.



17.3 In-Combination Effects

17.3.1 The other potential developments in the area are shown in **Figure 3**. The assessment also considers the potential West Winch Growth Area housing development (WWGA). There are significant cumulative effects identified for cultural heritage and landscape.

Figure 3 - Committed Developments Assessed for In-combination Effects



Construction Phase

17.3.2 The in-combination construction phase effects of the Proposed Scheme with other potential developments. The WWGA, in combination with the Proposed Scheme has potential to result in **Moderate Adverse (Significant)** effects upon heritage receptors due to changes in the landscape setting.

17.3.3 There is also potential for in-combination effects on local landscape receptors as a result of construction traffic and activities. This has potential to result in **Moderate Adverse (Significant)** effects. However, these effects are considered to be temporary.



Operational Phase

17.3.4 The in-combination operational phase effects of the Proposed Development and other potential developments, including the WWGA have the potential to result in **Moderate Adverse (Significant)** effects upon heritage receptors due to detractions in the setting of assets.

17.3.5 There is potential for **significant** in-combination effects on landscape receptors during the operational phase year 1. However, with embedded mitigation, at year 15, residual effects are considered to be **not significant**.

18 Summary of Mitigation Measures

18.1.1 This chapter presents a summary of the residual effects, together with any proposed secondary mitigation, for each technical discipline assessed within the ES. It provides a detailed list the of the following:

- likely significant environmental effects considered (for the demolition, construction and operational stages);
- sensitive receptors considered;
- significance and nature of effects prior to mitigation / enhancement (pre-secondary mitigation / enhancement effects);
- any proposed secondary mitigation / enhancement measures;
- monitoring requirements; and
- significance and nature of effects following mitigation enhancement (residual effects).

18.1.2 Appended to this chapter is an Outline Construction Environmental Management Plan which must be used by the appointed Principal Contractor to produce a Detailed Construction Management Plan which will to ensure compliance to mitigation commitments recommend as part of the EIA process are in place during construction.