A585 Windy Harbour to Skippool Improvement Scheme Environmental Impact Assessment Scoping Report

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Environmental Impact Assessment Scoping Report

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1.0	June 2017	Draft issued to Highways England
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CONTENTS

1 INTRODUCTION

1.1 Background to and Purpose of this Report

1.1.1 Highways England (the Applicant) has been investigating options to alleviate a major bottle neck along the A585 between the Windy Harbour junction and the Skippool junction near Poulton-le-Fylde. As a result of the options work Highways England announced on 24 October 2017 that an offline 'southern' bypass solution between the two junctions was the preferred solution (hereafter referred to as the 'Scheme').

1.1.2 The Scheme is a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008 as amended. Therefore, an application for Development Consent Order (DCO) is required to be submitted by Highways England to the Secretary of State (SoS) for transport via the Planning Inspectorate (PINS). This application will be accompanied by an Environmental Statement (ES) prepared in accordance with the Infrastructure Planning (Environmental Impact Assessment (EIA)) Regulations 2017 (SI No. 572) (hereafter referred to as the 'EIA Regulations').

1.1.3 The purpose of this Scoping Report is to establish the scope of the ES and to support the request for a scoping opinion under Regulation 10 (1) of the EIA Regulations.

1.1.4 The EIA Regulations set out the requirements for an applicant who proposes to request a scoping opinion from the SoS. Regulation 10 (3) of the EIA Regulations states that a request for a scoping opinion must include:

- A plan sufficient to identify the land
- A description of the proposed development, including its location and technical capacity
- An explanation of the likely significant effects of the development on the environment
- Such other information or representations as the person making the request may wish to provide or make

1.1.5 PINS Advice Note 7: EIA, Screening and Scoping (March 2015) provides advice on the information that should be provided in the Scoping Report. Table 1-1 lists the suggested information requirements and identifies where they are presented within this Scoping Report PINS. Note this advice note is due to be updated imminently.

Table 1-1: PINS Information Requirements

Suggested Scoping Report Contents (Based on Advice Note 7)	Relevant Chapter in the EIA Scoping Report
A plan showing: - The proposed draft DCO site boundary (identified by a red line) including any associated development - Any permanent land take required for the proposed development	Appendix A – Figure 1.1, 1.2, 1.3 and Figures 7.1 – 16.1

Suggested Scoping Report Contents (Based on Advice Note 7)	Relevant Chapter in the EIA Scoping Report
- Any temporary land take required for construction, including construction compounds - Any existing infrastructure which would be retained or upgraded for use as part of the proposed development and any existing infrastructure which would be removed - Features including planning constraints and designated areas on and around the site such as national parks or historic landscapes	
A description of the proposed development including both the NSIP and any of the associated development.	Chapter 2
In dealing with the description of the development and its possible effects on the environment, applicants should: Set out the information using the headings in Schedule 3 to the EIA Regulations, being: - Characteristics of the development - Location of the development - Characteristics of the potential impacts - Ensure that all aspects of the environment likely to be significantly affected by the development are addressed	Chapter 2, 3 and 7 to 16
An outline of the main alternatives considered and the reasons for selecting a preferred option.	Chapter 3
Results of desktop and baseline studies where available.	Chapter 7 to 17
Referenced plans presented at an appropriate scale to convey clearly the information and all known aspects associated with the proposal.	Appendix A
Guidance and best practice to be relied upon, and whether this has been agreed with the relevant bodies (for example the statutory nature conservation bodies or local authorities) together with copies of correspondence to support these agreements.	Chapter 7 to 17
Methods used or proposed to be used to predict impacts and the significance criteria framework used.	Chapter 7 to 17
Any mitigation proposed and predicted residual impacts.	Chapter 7 to 17
Where impacts from consequential or cumulative development have been identified, how applicants intend to assess these impacts in the ES.	Chapter 17
An indication of any European designated nature conservation sites that are likely to be significantly	Chapter 11

Suggested Scoping Report Contents (Based on Advice Note 7)	Relevant Chapter in the EIA Scoping Report
affected by the proposed development and the nature of the likely significant impacts on these sites.	
Key topics covered as part of applicants' scoping exercise.	Chapter 7 to 17
The elements of the proposed development likely to have a significant environmental effect should be identified. Where uncertainty remains, the applicant should provide as much detail as possible or assume the worst case (e.g. maximum dimensions of a building or feature).	Chapter 7 to 17
The applicant may also wish to provide a completed transboundary screening matrix dealing with the effect of the proposed development on other European Economic Area (EEA) States with the scoping report.	Appendix C

1.2 Introduction to the Scheme and its Locations

1.2.1 Highways England (the Applicant) has been investigating options to alleviate a major bottle neck along the A585 between the Windy Harbour junction and the Skippool junction near Poulton-le-Fylde. As a result of the options work Highways England announced on 24 October 2017 that an offline 'southern' bypass solution between the two junctions was the preferred solution (hereafter referred to as the 'Scheme').

1.2.2 The A585 (T) is a single carriageway trunk road, which provides the only viable access from the motorway network (M55 at Junction 3) into Fleetwood and its urban areas. As a result, it suffers from extreme congestion. The Government's Autumn Statement in 2014 identified the need for an Improvement Scheme along the A585 between Windy Harbour and Skippool to ameliorate the impact of traffic on the route between the two villages and to remove a major bottleneck.

1.2.3 The Scheme would comprise an offline bypass between the A585 at Windy Harbour and Skippool villages in Poulton-le-Fylde. The road bypasses the village of Little Singleton.

1.2.4 The Scheme would follow a route to the south of the ribbon development between Skippool and Little Singleton. It is 4.86km in length, would bypass two of the most significant junction constraints and provide dual-carriageway capacity. Figure 1.1 at Appendix A shows the geographic location of the Scheme and the surrounding road network. Figure 1.2 at Appendix A presents the Scheme.

1.2.5 The landscape surrounding the Scheme is low lying and coastal characterised by arable fields, pasture, drainage ditches and small to medium sized blocks of mixed woodland. The Wyre Way regional trail runs east from the edge of the Wyre Estuary Country Park along the southern bank of the Wyre Estuary as far as Little Singleton. Further to this, there is publicly accessible land at The Wyre Estuary Country Park which is located north of Skippool. There is a greater density of residential properties surrounding the western half of the Scheme with farmland becoming more prevalent

to the east. To the south of Little Singleton and east of the B5260 there is an area of non-designated Parkland. There are eight Noise Important Areas along Breck Road, Mains Lane and Fleetwood Road within the vicinity of the Scheme.

1.2.6 Environmental constraints within the locality of the Scheme include the Morecambe Bay and Duddon Estuary Special Protection Area (SPA), Ramsar, Site of Special Scientific Interest (SSSI) and recommended Marine Conservation Zone (rMCZ) approximately 500m to the north of the Scheme. There are also three Biological Heritage Site (BHS) designations associated with the Wyre Estuary (important at a local level). The Main Dyke watercourse lies to the west of the Scheme and there are areas of low lying floodplain and some areas of flood zone 3 associated with Main Dyke and the Wyre Estuary covering the Scheme footprint. Heritage features include the Conservation Areas at Poulton le Fylde and Singleton as well as isolated Grade II Listed Buildings.

1.3 Introduction to the Statutory EIA Process

1.3.1 The aim of EIA is to protect the environment by ensuring that the decision maker, when deciding whether to grant permission for a scheme, which is likely to have significant effects on the environment, does so in the full knowledge of the likely significant effects, and takes this into account in the decision-making process. In general terms, the main stages in the EIA are as follows:

- Data Review - draw together and review available data
- Screening – determine whether a project constitutes EIA development
- Scoping - identify significant issues and determine the subject matter of the EIA
- Baseline surveys – collate baseline data, undertake baseline surveys and monitoring to confirm the existing conditions
- Consultation - seek feedback from consultees and the public in relation to key environmental issues, methodology adopted and design approaches
- Assessment and iteration - assess likely effects of the Scheme, evaluate alternatives, provide feedback to design team on adverse impacts, incorporate mitigation, assess effects of mitigated development
- Preparation of the ES and the Non-Technical Summary

1.3.2 Additionally, during the EIA process opportunities to deliver enhancements would be explored in consultation with appropriate stakeholders. The Highways England licence (April, 2015) also states within paragraph 4.2g that when exercising its functions and complying with its legal duties and other obligations, it should act in a manner which it considers are best calculated to: “Minimise the environmental impacts of operating, maintaining and improving its network and seek to protect and enhance the quality of the surrounding environment”.

1.3.3 Between production of this EIA Scoping Report and the submission of the ES with the DCO application, the Preliminary Environmental Information Report (PEIR) would be produced. This is required for the statutory consultation and PINS Advice Note 7 Preliminary Environmental Information, Screening and Scoping (March, 2015).

1.4 EIA Screening Summary

1.4.1 EIA Screening is an initial step in the EIA process. Its purpose it to determine whether a proposed project falls within the remit of the EIA Regulations and whether it is likely to have a significant effect on the environment - therefore requires an assessment.

1.4.2 EIA Screening undertaken for the Scheme concluded that although not located within a 'sensitive area' (as defined in the EIA Regulations 2017), it is located on potentially functionally linked land associated with the Morecambe Bay and Duddon Estuary SPA and Morecambe Bay Ramsar site and significant landscape, noise and cultural heritage effects cannot be ruled out.

1.4.3 Therefore, it is considered that the Scheme constitutes EIA Development under Schedule 2, Regulation 10 (f) (Construction of Roads) of the EIA Regulations and an ES is required to be prepared to support the DCO application.

1.5 The Scheme Team

1.5.1 The current Scheme team members are summarised in Table 1-2.

Table 1-2: The Scheme Team

Organisation	Role
Highways England	The Applicant
Arcadis	Design, EIA Consultants, stakeholder management and engagement, traffic modelling.

2 DESCRIPTION OF THE SCHEME

2.1 Background to the Scheme

2.1.1 The Department for Transport (DfT) outlined in its Road Investment Strategy (RIS) Statement 2014, its aims for the Strategic Road Network (SRN). Part of this was to identify key investment needs on the SRN so Highways England developed a Route Based Strategy (RBS) to focus on those routes in the greatest need of improvement. The A585 Windy Harbour to Skippool Improvement Scheme was identified as a priority and included in the RIS for delivery in Road Period 1 (to start construction by March 2020).

2.1.2 In April 2014, the then Highways Agency produced the South Pennines Route Strategy (SPRS) document with supporting evidence and Technical Annex. The South Pennines route includes the whole of the A585 from the M55 through to Fleetwood. The SPRS reports on the planned growth for the area and the possible new uses for the Port of Fleetwood. This implies a significant increase in demand for the A585 route. Consequently, ensuring that the route would accommodate any future growth is a key priority.

2.2 Scheme Objectives

2.2.1 The Scheme objectives are listed below:

- Reduce congestion on the existing A585 through Little Singleton Junction, Shard Junction and Skippool Junction
- Reduce severance and Improve access across the A585 between Little Singleton and Skippool Junctions
- Improve connectivity and community cohesion
- Making the A585 route safer by reducing conflicts between users
- Improve journey time reliability by reducing congestion
- Deliver capacity enhancements to the SRN whilst supporting the use of sustainable modes
- Support employment and residential/commercial development and growth opportunities
- Support the removal of obstacles to economic growth potential in both Wyre and Fylde
- Reduce/minimise the impact on the wider environment particularly for air quality and noise
- Compliment and realise the full benefits of the earlier Pinch Point scheme at Windy Harbour junction

2.3 Overview

2.3.1 The Scheme includes the following components (refer to Figure 1.2 at Appendix A):

- 4.86km (3 miles) of new two lane dual carriageway bypass over an area of approximately 27.60ha connecting Windy Harbour Junction to Skippool Junction
- 4 new junctions along the bypass including:

- Skippool Junction
- Skippool Bridge Junction
- Poulton Junction
- Grange Junction (only if Option 1A goes ahead – refer to Section 2.4)
- 4 new major structures including:
- Skippool Bridge
- Lodge Lane Bridge
- (Skippool Clough Culvert – following a condition survey, may need strengthening as it passes below the new Skippool junction)
- Grange Footbridge (Structure will only be required if Option 1B goes ahead – refer to Section 2.4)
- 3 construction compounds at Chainage (Ch).200, Ch.500 and Ch.3600 (note Ch is presented on Figure 1.2 at Appendix A)
- Associated works for temporary access, temporary lay-down and work areas and ancillary works

2.4 Scheme Options

2.4.1 As part of the Scheme there are four sub-options. These options are:

- Option 1A – Providing a junction between the bypass and Garstang Road – 'Grange Junction'
- Option 1B – Not providing a junction between the bypass and Garstang Road
- Option 1A plus Shard Road Link – Option 1A as above plus an offline road link between Mains Lane at the tie-in with the new bypass and Shard Road
- Option 1B plus Shard Road Link – Option 1B as above plus an offline road link between Mains Lane at the tie-in with the new bypass and Shard Road

2.5 Scheme Alignment

Skippool Junction to Skippool Bridge Junction

2.5.1 Working from west to east the Scheme would start with the re-construction of the Skippool Junction (Ch.330) from a priority roundabout to a 4-way traffic signal controlled crossroads with designated turning lanes and improved Non-Motorised User provision through phased timings and an increased number of crossing points. Passing under the existing footprint of Skippool Junction roundabout is Skippool Clough Culvert carrying Horsebridge Dyke northwards towards the River Wyre.

2.5.2 From the new Skippool Junction the alignment follows the same direction as the existing A585 Mains Lane but as a dual all-purpose carriageway across the existing Skippool Bridge (Ch.620) and to a new traffic signal controlled T-junction (Skippool Bridge Junction (Ch.750)) which is the start of the bypass section. Skippool Bridge Junction would be provided with a U-turn facility to allow access to properties fronting the route and full pedestrian crossing facilities. The section of the alignment prior to Skippool Bridge is 350m in length with a low point of 6.2m above Ordnance Datum (AOD). Through Skippool Junction to Skippool Bridge Junction the speed

limit would be 40mph due to the closeness of the junctions and frontage accesses. Existing frontage accesses on both sides of the road will be retained and a new connection of Old Mains Lane will be made to Skippool Bridge Junction.

2.5.3 Skippool Bridge supports the A585 over Main Dyke and would require demolition and replacement to accommodate the widening of the road. This would be undertaken in two stages to maintain continual traffic usage.

2.5.4 The existing bridge is made up of two structures comprising a pair of 1.8m diameter culverts widened in the 1920s by the addition of a 6.25m single span arch on the south, upstream side. The existing utilities apparatus within the existing bridge would need to be transferred into the northern half of the new bridge, traffic diverted onto the new bridge before the existing bridge could be demolished.

Shard Road Link

2.5.5 Leaving the bypass to the north is a new link road (Shard Road Link) running north-eastwards between Skippool Bridge Junction and a new priority roundabout on A588 Shard Road.

2.5.6 Shard Road Link would be a single two-way all-purpose carriageway. The link would have the national speed limit for a single carriageway (60mph) and would be restricted to 40mph on the approaches to the junctions.

2.5.7 Junctions and connections would be provided to Mains Lane and Old Mains Lane north-east of Skippool Bridge Junction but these would not be signalised.

2.5.8 The Link Road would not have provision for pedestrians along its length but footways would be provided along the Mains Lane and Old Mains connections with suitable provisions to cross the Link Road.

2.5.9 The existing farm access track linking Mains Lane and Shard Road immediately at the rear (north) of the properties on the north side of Mains Lane would become redundant. Replacement access to the farmland on the north side of the Link Road would be provided from the new Shard Road junction and off the Old Mains connection.

Skippool Bridge Junction to Poulton Junction

2.5.10 Skippool Bridge junction would be the connection between the new bypass and the existing Mains Lane. From Skippool Bridge the alignment rises slightly to accommodate the super elevation required. South-east of Skippool Bridge junction the speed limit on the dual carriageway bypass would be the national speed limit (70mph) and the bypass heads in a south easterly direction. The route reaches a high point of 11.2m AOD (Ch.880) southeast of Skippool Bridge junction. From this high-point the bypass would be on an embankment about 3.5m high as this area is within the Main Dyke flood plain. The Scheme then descends at 0.67% to cross over several ditches until it eventually reaches a low point at 6.8mAOD (Ch.1625) southeast of Skippool Bridge junction.

2.5.11 The ditches would be culverted to maintain connectivity, allow floodwater to pass through the embankment to provide additional storage and to serve as mammal passes through the embankment.

2.5.12 At Ch.2270, a new priority roundabout junction (Poulton Junction) would provide a connection to the A586 Garstang Road East allowing access to Poulton-le-Fylde and Little Singleton. The roundabout would be subject to a 50mph speed limit.

Poulton Junction to Windy Harbour Junction

2.5.13 From Poulton Junction the bypass section would climb at about 4% gradient in an eastward direction where, in deep cutting (8.6m at its deepest) the route would pass under the new Lodge Lane Bridge that would carry the B5260 Lodge Lane over the bypass. To limit land take and environmental effects the cutting passing near to Singleton Manor, Barnfield Manor and Singleton Hall (and its Grade II listed Ice House) would use a lengths of retaining wall on both sides of the bypass.

2.5.14 About 200m east of the retained cutting at Lodge Lane Bridge, the Scheme would continue to rise to pass over an existing 24" Asbestos Cement Water Main.

2.5.15 At Ch.3970 a new at grade traffic signal controlled T-junction (Grange Junction) would be provided with a connection to the existing Garstang New Road. The junction would include a dedicated westbound right turn lane and facilities for pedestrians to cross the bypass route that would provide for the continuity of the public footpath that would be intersected by the bypass. The scheme would continue from the new Grange Junction and tie into the existing Windy Harbour junction where the speed limit would revert to 50mph as existing.

2.5.16 An alternative layout is also being considered at the location of Grange Junction. The alternative bypass option (Option 1B) would omit a junction with Garstang New Road and continue to the tie in point with the Windy Harbour junction. To maintain the continuity of the public footpath intersected by the bypass, a new footbridge (Grange Footbridge) would be provided across the bypass. The section of Garstang New Road from Little Singleton (Five Lane Ends junction) to the tie in point would be decommissioned except to retain access to neighbouring fields and to provide a route for pedestrians and cyclists. Five Lane Ends junction layout would also be improved to allow the traffic to head towards Poulton Junction where it can access the bypass.

2.5.17 The dual carriageway horizontal and vertical alignments would be designed to the Design Manual for Roads and Bridges (DMRB) TD 09/93 Table 3 for highway link design. The design speed would be 120km/h (75mph) for a dual two-lane all-purpose road.

2.6 Earthworks Design

2.6.1 All junctions would be at grade to avoid significant construction costs and access issues. Between the junctions, the existing ground levels rise and fall between 4mAOD and 23mAOD. To achieve the required profile, there are various locations the route goes into cutting or requires fill. Tables 2-1 and 2-2 below highlight the locations of the cutting and embankment slopes.

Table 2-1: Eastbound Cutting and Embankment Slopes

Eastbound Cutting / Embankment	Chainage	Maximum Height
Embankment	660-680	0.9m
Cutting	690-770	-0.5m
Cutting	810-1060	-0.9m
Embankment	1060-2220	5.3m

Eastbound Cutting / Embankment	Chainage	Maximum Height
Cutting	2340-2490	-0.5m
Embankment	2490-2760	3.5m
Cutting	2760-3340	-8.6m
Embankment	3340-3940	2.6
Embankment	4330-4420	1.1

Table 2-2: Westbound Cutting and Embankment Slopes

Westbound Cutting / Embankment	Chainage	Maximum Height
Cutting	760-890	-0.9m
Embankment	890-2220	5.3m
Embankment	2330-2380	1.8m
Cutting	2380-2440	-0.5m
Embankment	2440-2875	3.5m
Cutting	2875-3250	-8.3m
Embankment	3250-3580	2.7m
Cutting	3580-3710	0.1m
Embankment	3710-4450	1.5m
Cutting	4450-4790	0.1m

2.6.2 At this stage of the design, the cut and fill earthworks side slopes have been assumed to be 1 in 3 due to probable soft nature of the ground. This would be confirmed through the ground investigation.

2.6.3 The current analysis indicates that there would not be sufficient excavated material to form the proposed embankments. Consequently, borrowpits are proposed south of Little Singleton on both the north and south sides of the bypass (west of Lodge Lane) where additional material can be excavated. These locations have been chosen to avoid construction traffic having to pass through Little Singleton or having to cross the existing A585 road. The design of the borrowpits would allow the land to be returned to agriculture on completion of the excavation works.

2.6.4 However, parts of the embankment between Skippool Bridge Junction and Poulton Junction would have to be constructed of granular material as this embankment is within the Main Dyke floodplain. This granular material will have to be imported to the Scheme as there is no locally available suitable material.

2.7 Highways Structures

2.7.1 Table 2-3 is a list of all the structures proposed for the southern bypass option.

Table 2-3: List of Structures

Name of Structure	Details of Proposed Works
Skippool Clough Culvert	Changes to highway alignment above the culvert
Skippool Bridge	Demolition of existing structure and construction of a single 14.1m span bridge
Skippool Bridge North East Wing Wall	Construction of 30m of new retaining wall
Old Mains Lane Retaining Wall	Construction of 120m of new retaining wall
Lodge Lane Overbridge	Construction of 2 span, (21.70m, 21.70m) bridge.
Lodge Lane North Retaining Wall	Construction of 142m new retaining wall.
Lodge Lane South Retaining Wall	Construction of 196m new retaining wall.
Grange Footbridge	Construction of a new footbridge over the bypass (Structure will only be required if Option 1B goes ahead)

2.7.2 An alternative arrangement for the bridge at Lodge Lane was developed following the 2016 public consultation as residents expressed concern about the effects of the bypass on their nearby homes and requested the bypass be put in tunnel. A short version of a tunnel (described as a land bridge) about 100m long has been developed and, while adding considerably to the Scheme cost, has not at this stage been rejected. The land bridge would allow that area above the bypass to be returned to pasture land as well as providing additional screening of the bypass.

2.8 Highways Drainage

2.8.1 At this stage of the design only the principle of the drainage system has been developed.

2.8.2 Existing field ditches would be retained or diverted as part of the bypass construction and these are located at Ch.1200, Ch.1570, Ch.1850, Ch.2060, Ch.2570, Ch. 4350 and Ch. 4400 crossing the bypass through new or extended culverts. The new culverts would be 1.5m diameter mammal ledges to assist creatures crossing the route of the bypass.

2.8.3 A number of highway wetland areas would be constructed to provide storage, containment and treatment of water run-off from the bypass. These would be provided at Ch.1700, Ch.2400, Ch.4150 and Ch.4460. These wetland areas would discharge into adjoining watercourses

2.9 Highways Lighting

2.9.1 Lighting would be required at junctions only and no lighting will be provided along the route of the bypass. However, the lighting design is currently being developed and therefore the actual extent of new lighting is not yet confirmed.

2.9.2 The lighting design would minimise light pollution which can cause sky glow, glare and light trespass. The design of the lighting would take into account potential landscape and ecological effects.

2.10 De-Trunking

2.10.1 De-trunking of the existing A585 would be undertaken as part of Scheme. The whole of the existing A585 road would be retained between Skippool and Windy Harbour and, by agreement, would be taken over by the local highway authority - Lancashire County Council. The following works may be required to be undertaken prior to adoption by Lancashire County Council (this would be confirmed through a meeting and the evolving Scheme design):

- Traffic calming measures
- Enhancements to pedestrian and cycle provision alterations
- Alterations to Shard Road traffic signal junction
- Alterations to Little Singleton junction
- Changes to the street lighting system (subject to age and condition) – possible upgrade to LED lighting or changes to the lighting along Garstang New Road if it is to be decommissioned but retained for non-motorised users
- Modifications to all road signing
- Detailed condition survey of all drainage assets
- Possible resurfacing of the carriageway

2.11 Non-Motorised User Provision

2.11.1 Where the proposed route would affect the existing Public Rights of Way (PRoW) network measures will be developed to ensure the route is available at all times during construction and the design will be developed to accommodate use of the footpaths in the Scheme – this may include an overbridge or a suitable diversion.

2.11.2 Additional cycleway/ footway crossing provisions would be provided at the junctions. Improvements would also be made to the existing Mains Lane and Garstang New Road as part of de-trunking.

2.12 Flood Risk Assessment

2.12.1 Parts of the area in the vicinity of the Scheme are prone to river and tidal flooding. Therefore, in accordance with the requirements of the National Planning Policy Framework a Flood Risk Assessment (FRA) is currently being prepared to demonstrate how flood risk to the Scheme would be managed now, and when taking future climate change into account. The FRA also considers the flood risks generated as a result of the Scheme's construction.

2.12.2 The FRA is being prepared for the Scheme in consultation with the Environment Agency (EA) and informed by hydrological and hydraulic modelling of a number of watercourses within the vicinity. The FRA would be further developed to inform the design of any necessary flood risk management measures and to provide data to feed into the ES.

2.13 Construction

2.13.1 Construction is anticipated to last for approximately two years and commence in March 2020. Construction staging is yet to be determined. The number of stages required at each location depends of the complexity of construction and measures to keep traffic moving safely through the work sites.

Skippool Junction

2.13.2 To create the working space required from the new 4-way signalised crossroads junction, Temporary Traffic Management (TTM) would be installed to create a lane width around the existing roundabout for a site access. All existing infrastructure within this cordon would be removed and replaced with full depth construction to the new carriageway specification. Once the pavement construction has been completed within the cordoned area, a temporary roundabout would be constructed upon the new asphalt. This would have the ability to be moved around as the TTM phasing dictates. The traffic on the approaches to the existing roundabout would be restricted to single lanes in each direction maximising the work area and to allow for the traffic islands to be built.

2.13.3 Following this traffic on the existing A585 for both lanes would be switched to the newly constructed eastbound carriageway. The existing traffic island on the Breck Road (southern) approach to the junction would be removed as part of the traffic switch. The traffic on the approach would also be restricted to single lanes at the roundabout. The westbound carriageway would be re-constructed and the property accesses would also be constructed.

2.13.4 Then temporary traffic signals would be implemented together with the construction of the remaining traffic islands. With the final islands complete, a final period of works would be undertaken to complete any remaining areas of surface course and in installation of the permeant traffic signals and markings.

Skippool Bridge

2.13.5 The construction of the new Skippool Bridge would be undertaken in two stages. Initially the northern section of the new bridge would be constructed offline while traffic would remain on the existing road. Before this part of the bridge is completed, utility apparatus would be diverted into the northern section of the bridge. A temporary safety barrier would be installed before the traffic is moved to the new section of the bridge.

2.13.6 The existing bridge over Main Dyke would be demolished and the southern half of the new bridge would be constructed.

2.13.7 Subject to timing of the completion of Skippool Bridge Junction, traffic would be able to use both carriageways over the new bridge.

Skippool Bridge Junction

2.13.8 The intention during construction of this junction would be to maintain the traffic on the existing alignment. The majority of the junction would be constructed offline.

2.13.9 The connection for Old Mains Lane would be constructed first then the eastbound carriageway would connect to Mains Lane to the east.

2.13.10 Following this the traffic would be under TTM and the southern section of the junction would be constructed.

Skippool Bridge Junction to Poulton Junction

2.13.11 This section of the route requires a significant volume of fill material to achieve the required vertical profile. A settlement period would need to be accounted for so it is proposed to start the works as early as possible in the programme. The fill material would need to be brought in via a works access at the location of the new Poulton junction. The fill material is assumed to be coming from the excavation beneath the new Lodge Lane Bridge. However, significant quantities of the granular fill material would need to be imported as described in Section 2.6.4 above.

Poulton Junction

2.13.12 The traffic would be maintained along A586 Garstang Road East, while the construction of the new alignment approaches and the offline roundabout sections are completed. The traffic would then be moved onto the new re-aligned sections while the rest of the roundabout is constructed under phased TTM.

2.13.13 The Scheme team is currently assessing the possibility of moving the location of Poulton Junction ~30m east of its current proposed location to allow for the construction of the roundabout to be made entirely offline. This would reduce the need for TTM phasing at the current location.

Poulton Junction to Lodge Lane

2.13.14 The bypass section would be built offline. From Ch.2440 to Ch.2810 a significant amount of fill material would be required to achieve the appropriate elevation. It would be practical to work back from Lodge Lane while the Lodge Lane Bridge is being constructed including using material obtained from the proposed borrowpits on the west side of Lodge Lane. Once Lodge Lane Bridge is constructed more material would be available from excavation further to the east using a temporary haul road to avoid any plant and materials travelling through Little Singleton.

Lodge Lane Bridge

2.13.15 A temporary diversion would be put in-place for the B5260 Lodge Lane traffic and utilities apparatus just to the west of the existing road. With the diversion in place, the piling would commence for the new bridge abutments. Following the piling, localised (but deep) excavation would take place at the structure location to allow for the central pier piles to be installed although it may be possible for the piles for the central pier to be constructed from ground level.

2.13.16 The retaining walls would be constructed and the rest of the excavation through the cutting section would be undertaken. This would allow clear access for the rest of the route to be completed.

2.13.17 The new Lodge Lane bridge deck would be completed including reinstatement of the utilities apparatus then traffic would all be moved back onto the new structure allowing the temporary diversion to be removed.

Grange Junction

2.13.18 The new junction would be constructed offline initially before being tied into the existing Windy Harbour junction and the existing Garstang New Road. The section of Garstang New Road immediately east of Grange Junction would become redundant except for provision of a shared use footway / cycleway on the north side of the road. Grange Junction would be tied into Garstang New Road under phased TTM.

2.13.19 For Option 1B where Grange Junction is not provided, construction of the main span of Grange Footbridge would be carried out off-line including steps to both sides and a ramp to the south side of the bridge. However, this would require advanced diversions of gas and telephone services away from the bridge foundations. Traffic would then be diverted onto the bypass westbound carriageway with a temporary connection back to Garstang New Road and pedestrians would be able to use the footbridge. The final stage would be to complete the north ramp to the footbridge.

Site Compounds

2.13.20 For the eastern (Little Singleton) sections of the Scheme it is suggested to have site compounds around Ch.3600 to Ch.3700. This would allow site vehicles to come up from the Windy Harbour junction and access the offline haul road.

2.13.21 For the western (Skippool) section two possible site compounds are proposed; one south of A585 Amounderness Way (Ch 200) west of Skippool Junction and the other north of the Breck Road at Ch.430 to Ch.530.

2.13.22 The site compounds would be used for plant and material storage and welfare facilities for staff.

Haulage Routes and Construction Traffic Management

2.13.23 Access for construction vehicles to the site would be from the trunk road network on designated routes which would be clearly signposted.

2.13.24 Haul routes within the Scheme area would be dictated by the balance of cut and fill within the site areas. This itself would be dictated by the design of the new roads and the suitability of the materials arising and their suitability for beneficial re-use.

2.13.25 The main areas where the construction sites would interface with the travelling public would be at locations where connections to the existing network would be created. In these locations, extensive traffic management and control would be required to segregate the construction sites from road vehicles.

2.14 Demolition

2.14.1 The property named West Wynds ~Ch.650 north of Skippool Bridge junction would require demolition prior to the construction of the new Skippool Bridge and the Old Mains Lane link.

2.14.2 The existing Skippool Bridge would be demolished as part of the widening between Skippool Junction and Skippool Bridge junction.

2.14.3 Following a condition survey on Skippool Clough Culvert, it is possible sections of the culvert may need to be re-built if maintenance or strengthening works are not a suitable option.

2.15 Services and Utility Diversions

2.15.1 There is a number of third party equipment which may be potentially affected by the Scheme belonging to:

- North West Electricity – underground and overhead cables
- National Grid Gas – gas distribution
- BT Openreach – underground and overhead cables
- United Utilities – water supply and sewers

- Thornton Facilities Management Ltd – former ICI ethylene pipeline

2.15.2 Appropriate diversions would need to be incorporated into the Scheme design.

2.16 Contaminated Land

2.16.1 The main potential sources of contamination that have been identified include landfills, farms, historical tanks and petrol stations, sewage tanks, infrastructure and manufacture sites and locations featuring unknown made ground. There are also a number of sites with unknown filled ground such as ponds, marshes, rivers and streams. These potential contaminative sources can be found at a variety of locations along the Scheme.

2.16.2 More specifically, there are two historic landfill sites which should be paid particular attention to. These are Skippool Marsh and Skippool Creek and are located approximately 500m north of the western end of the Scheme. Until 1972, the Skippool Marsh Landfill site continued to receive commercial waste.

2.16.3 Another source of significant contamination impact may be the numerous lime pits present in the study area. Some of these pits could be partially infilled and some completely infilled.

2.16.4 In addition to contaminated land, there is the risk of encountering asbestos within the Scheme. This is particularly related to several United Utilities water mains that are indicated to be asbestos cement, but it is also possible that drainage pipes are of this material and, due to the age of the existing structures, it may be encountered during any works to existing bridges and culverts.

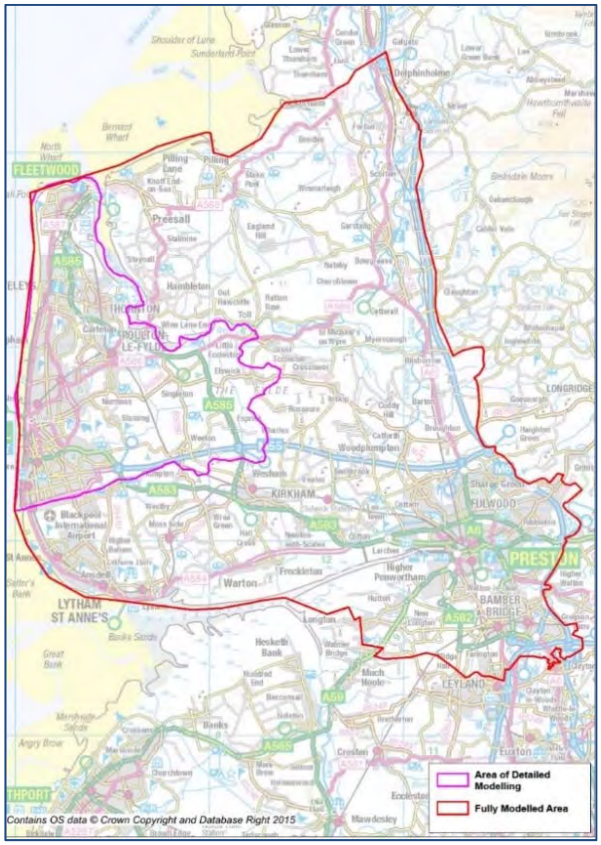
2.17 Waste Management

2.17.1 A Site Waste Management Plan and a Materials Management Plan (MMP) would be prepared following the protocols within the CL:AIRE Definition of Waste: Development Industry Code of Practice to ensure that excavated material are re-used appropriately, sustainably and remain outside the waste hierarchy. These documents would be prepared prior to construction.

2.18 Traffic Forecasting

2.18.1 The A585 Windy Harbour to Skippool Scheme's traffic model covers the Wyre, Fylde and Blackpool area. The model is bounded by the M6 to the East and by the edges of the Fylde Peninsula to the north, west and south.

Plate 2-1: Geographic Traffic Model Coverage



2.18.2 The future demand for travel within the model study area would be affected by several key factors. These include:

- Change in population and employment levels
- Change in the number of households
- Change in the level of car ownership

2.18.3 The impacts of these factors and the effect that they have on future year travel demand are modelled at a national level through the National Transport Model (NTM) developed by the Department for Transport, which itself incorporates the NTEM. The NTEM is fully integrated within the NTM and provides the future year demand growth inputs to the NTM, forming the starting point for national travel demand forecasting work.

2.18.4 Use of the TEMPRO database allows for the information contained within the NTM to be output in the form of forecast year trip end growth projections for car travel, thus allowing for local area traffic models to be developed on a consistent basis with regard to future year growth. However, it should be noted that forecast demands calculated using TEMPRO are reference case forecasts. For actual or 'equilibrium' demand to be determined, a subsequent process known as Variable Demand Modelling (VDM) is required.

2.18.5 Forecasts such as NTEM datasets are always subject to uncertainty and the Core Scenario is supplemented at a local level in the vicinity of the scheme by local development growth assumptions.

2.18.6 NTEM in conjunction with the local planning data / local development contained in

the Uncertainty Log would be used as the basis of the forecasts.

2.18.7 The categorisation of the local developments identifies the development that will be included in the core scenario and hence influences the level of forecast demand the scheme is designed to accommodate. The categorisation of local developments will be prepared in consultation with the Local Authorities in the area.

2.18.8 Traffic Forecasts undertaken for the Core Scenario will be used as the primary basis of evidence for the transport scheme.

2.18.9 The results of this traffic modelling would then be used to inform specific environmental topic assessments.

2.18.10 The A585 model validation base year is 2015 and the proposed model forecast years would be:

- Opening year of 2022
- Design year of 2037

2.18.11 Future year traffic flows would be extracted from the model for the purposes of the different environmental assessment topics, for example, Air Quality, Noise and Vibration.

2.18.12 Whilst the scenarios to be modelled and then assessed in the ES would be discussed and agreed with consultees, it is currently anticipated that the traffic forecasting would be carried out for the following scenarios:

- 2015 Base model validation year (reflecting the existing situation)
- 2022 (Opening Year) Without Scheme (but including any committed schemes that would open between 2015 and 2022)
- 2022 (Opening Year) – With Scheme (and committed schemes that would open between 2015 and 2022)
- 2037 (Design Year) Without Scheme (but including any committed schemes that would open between 2015 and 2037)
- 2037 (Design Year) – With Scheme (and committed schemes that would open between 2015 and 2037)

2.18.13 Any environmental data required for years other than the specific modelled years would be derived via interpolation or extrapolation of the modelled years. If there are changes to the project programme (for example a change in opening year), the modelled years would be modified accordingly.

2.18.14 Population and employment forecasts included within the models would reflect the latest NTEM, National Freight Forecasts supplemented by travel demands arising from local developments. Local developments would be categorised in the Uncertainty Log as either near certain, more than likely, reasonably foreseeable or hypothetical. The near certain and more than likely would provide the basis for the central (core) forecasting work. Sensitivity tests would be conducted which reflect low growth and high growth scenarios, incorporating different combinations of the possible future developments.

2.19 Environmental Design

2.19.1 One of the key functions of undertaking an EIA for a scheme is to inform the design.

This Scheme design is an iterative process which would take into consideration the key significant effects on environmental receptors and the mitigation proposed. During the options phase, the Scheme was designed to minimise its impact on the local environment, for example through minimising the number of structures over watercourses.

2.19.2 DMRB suggests design measures, which can be incorporated within highways design, to mitigate impacts arising from highways development. Dependant on the nature of the impact, the environmental design measures would address effects on different environmental receptors. Examples of these measures are detailed further below.

2.19.3 Environmental barriers in the form of earth mounding or acoustic fencing can provide screening from increased noise levels during the Scheme's operation phase. If utilised as part of a landscaping strategy the earthworks can also be planted to minimise visual impacts on the landscape.

2.19.4 Landscape integration can also be designed within the landscaping strategy for the Scheme to integrate the new Highway with the local character of the surrounding landscape and soften the visual impact. This landscaping strategy should aim to maintain local vegetation patterns and landform.

2.19.5 To mitigate potential impacts on the water environment associated with the construction and operation phases of the Scheme the design would include measures to control water pollution and methods to drain surface water from the site effectively. This could include surface water outfalls, soakaways, and the creation of balancing ponds or wetlands.

2.19.6 Scheme design should also consider biodiversity and include opportunities for habitat creation and enhancement. This may provide suitable conditions for species of nature conservation value. Understanding the impacts on habitats and the species they support at an early stage can help inform the design process so that linkages between habitats and new wildlife corridors may be incorporated within scheme design.

2.19.7 Furthermore, Highways England's Biodiversity Plan, published in June 2015, details the aims and obligations it has to deliver as part of the Government's RIS in terms of biodiversity. Highways England is expected to ensure the design of their road schemes reduce impacts on the environment by delivering a reduction in habitat fragmentation and enhancing biodiversity value. They should also actively manage habitats to ensure high species diversity and reduced fragmentation. This is further supported by Highways England's Licence (April, 2015) within paragraphs 4.2g, 4.2h (principles of sustainable development) and 5.2.

2.20 The Rochdale Envelope

2.20.1 PINS Advice Note 9: 'Using the 'Rochdale Envelope' provides guidance regarding the degree of flexibility that may be considered appropriate within an application for development consent under the Planning Act 2008. The advice note acknowledges that there may be parameters of a Scheme's design that are not yet fixed and, therefore, it may be necessary for the ES to assess likely worst-case variations to ensure that the likely significant environmental effects of the Scheme have been assessed.

2.20.2 Within this Scoping Report, the early concept design for the Scheme is presented.

The Scheme is to be developed further through the reference design and this would form the basis for the DCO application. Therefore, when presenting the Scheme design in the ES and the accompanying assessment the requirements of Advice Note 9 would be reflected. This would ensure that the likely significant effects of the Scheme are assessed. Furthermore, the reference design would be informed by the EIA with the design reflecting iterative working between the designers and the environmental specialists.

3 ALTERNATIVES ASSESSMENT

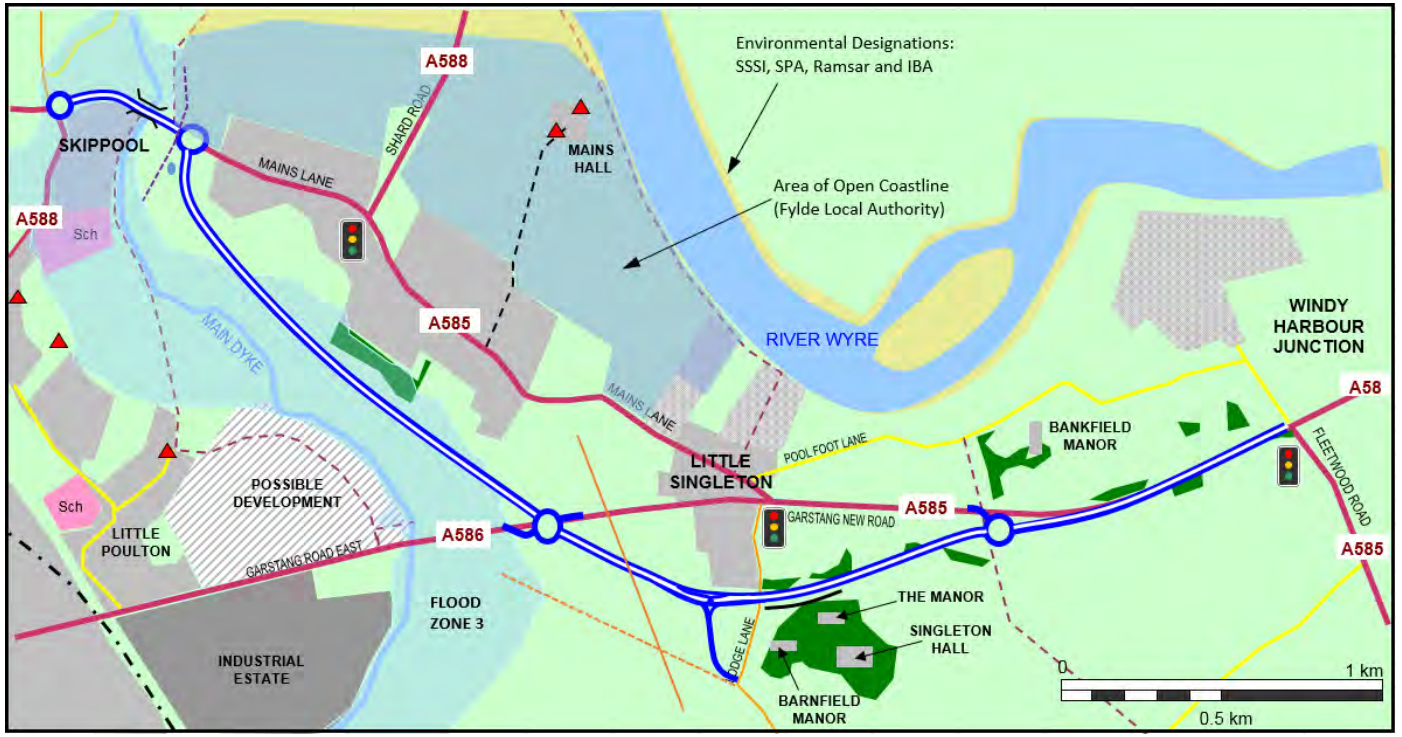
3.1.1 Three corridors were considered during Highways England's options stage (Project Control Framework (PCF) Stages 1 and 2), online, southern and northern corridors. Five options were identified for the southern corridor (S1-S5), while two options were identified for both the northern (N1 and N2) and online corridors (O1 and O2). The options were different in terms of the junction strategy and the number of lanes as well as lane utilisation. A total of nine options were therefore considered within during the options stage.

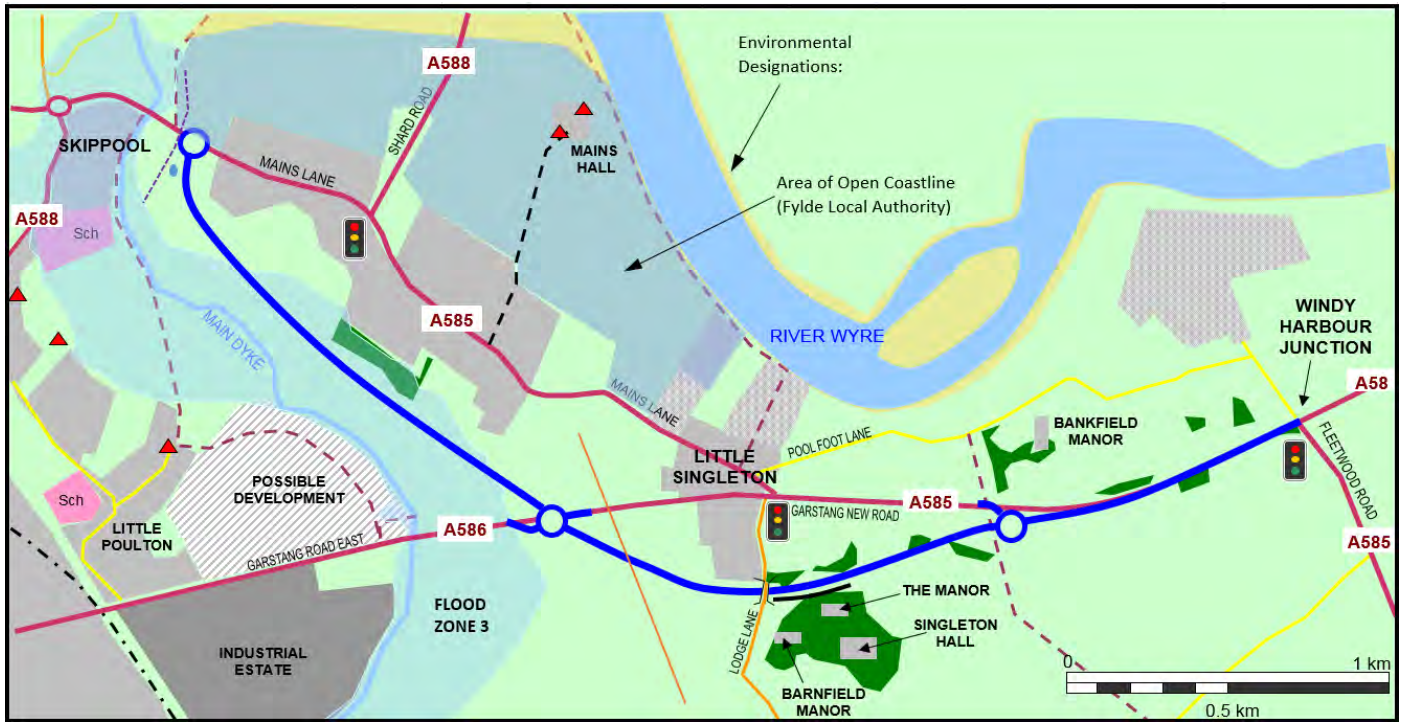
3.1.2 A number of alternative arrangements were suggested by the members of public as part of the public consultation. The main suggestion was for an alternative southern bypass passing much further south between Poulton Junction and Windy Harbour Junction than the Scheme's alignment.

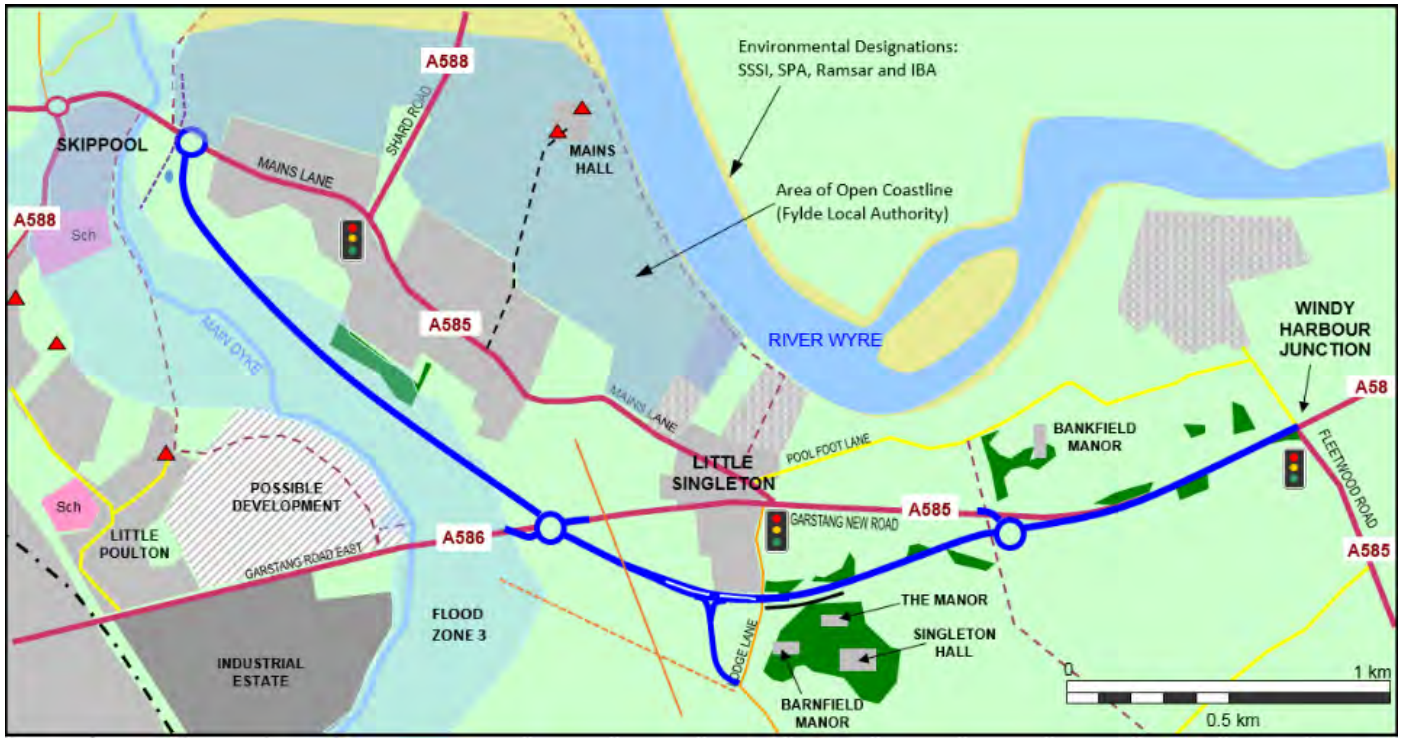
3.1.3 During the options stage two Environmental Assessment Reports (EARs) were prepared (one at each of PCF Stages 1 and 2) which assessed the options in accordance with DMRB. The EARs provided an assessment of air quality, cultural heritage, landscape effects, noise, biodiversity, geology and soils, road drainage and the water environment, people and communities and materials. The conclusions of the assessments within the EARs where then used at sifting workshops to help to reject options and inform the selection of the preferred option.

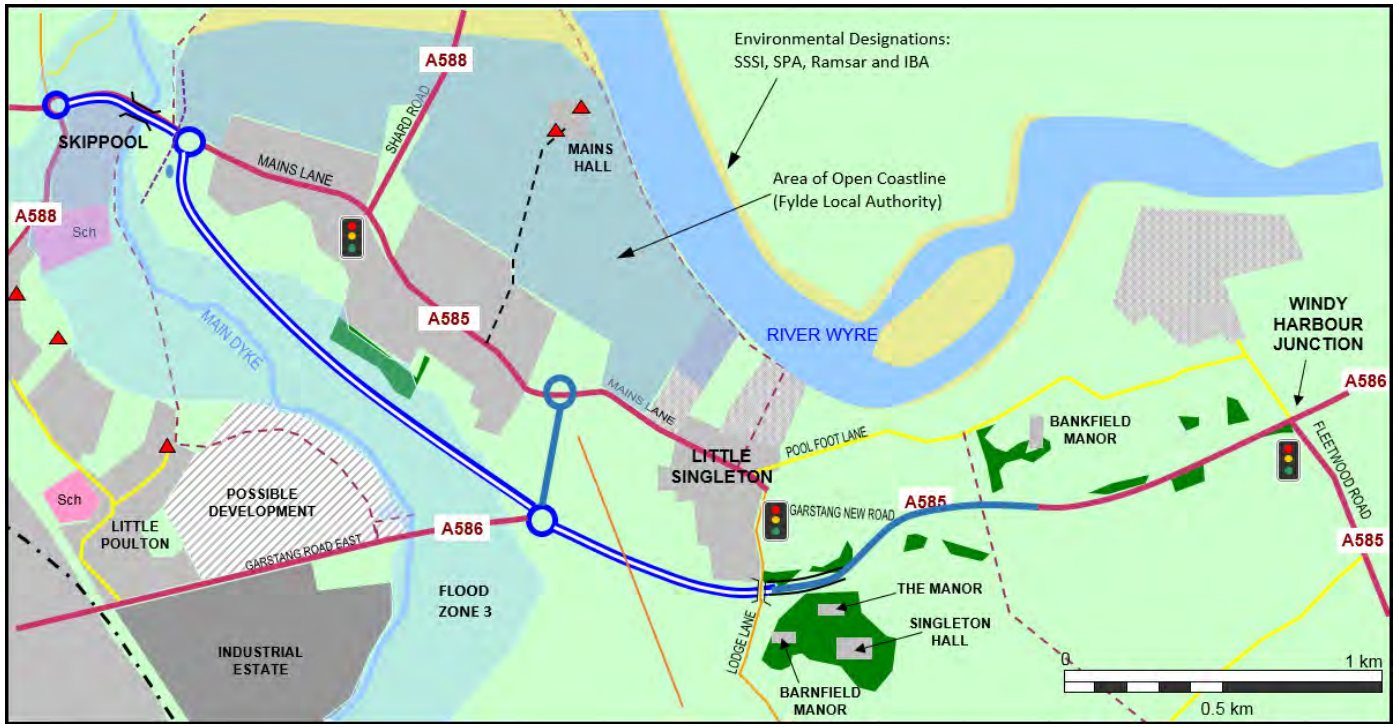
3.1.4 Further detail of the rejected options as well as the reasoning for rejecting them is provided in Table 3-1.

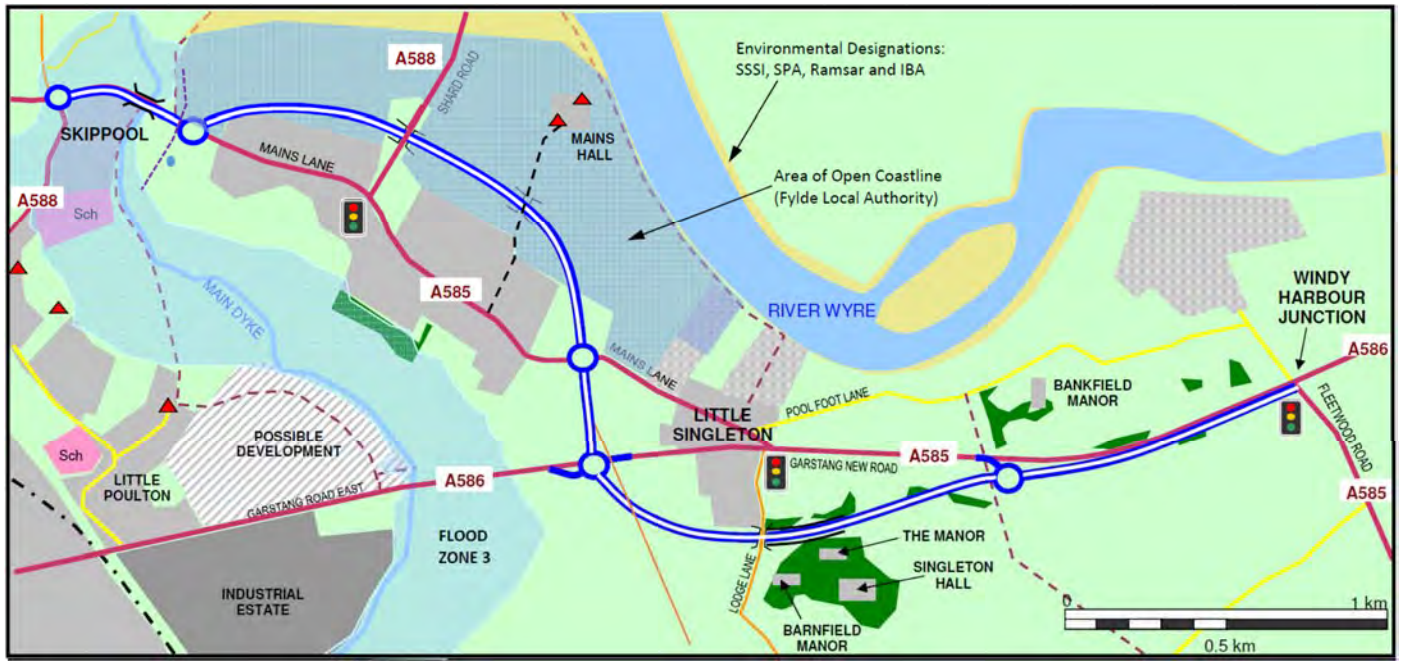
Table 3-1: Alternative Rejected Options

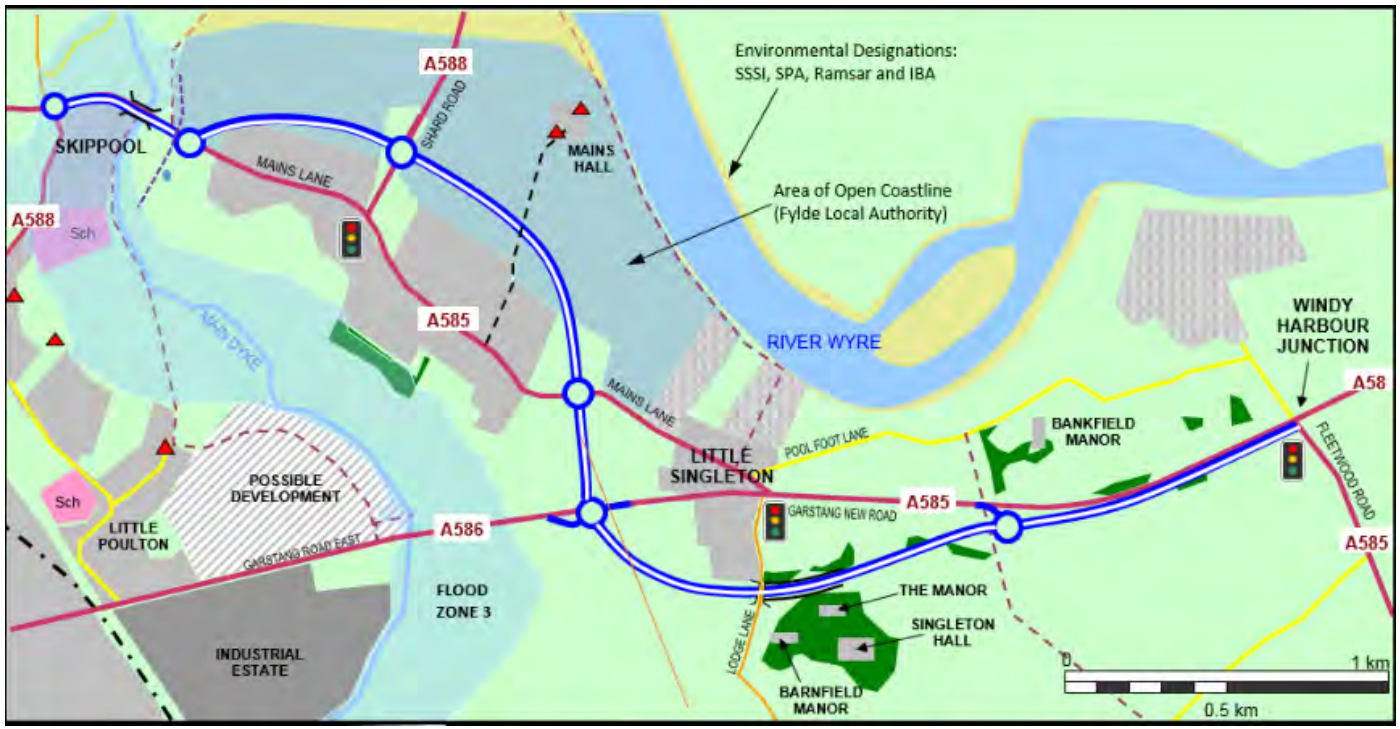
Option / Description	When Rejected	Reasons
Southern Bypass – **Option S2** Similar to the Scheme but with an at-grade T-Junction with Lodge Lane South of Little Singleton. The bypass would be in shallow cutting at Lodge Lane and the side road would be severed.	2016	Rejected as would have introduced an at-grade junction that could have encouraged traffic to use inappropriate local routes and the close spacing of the junctions. 

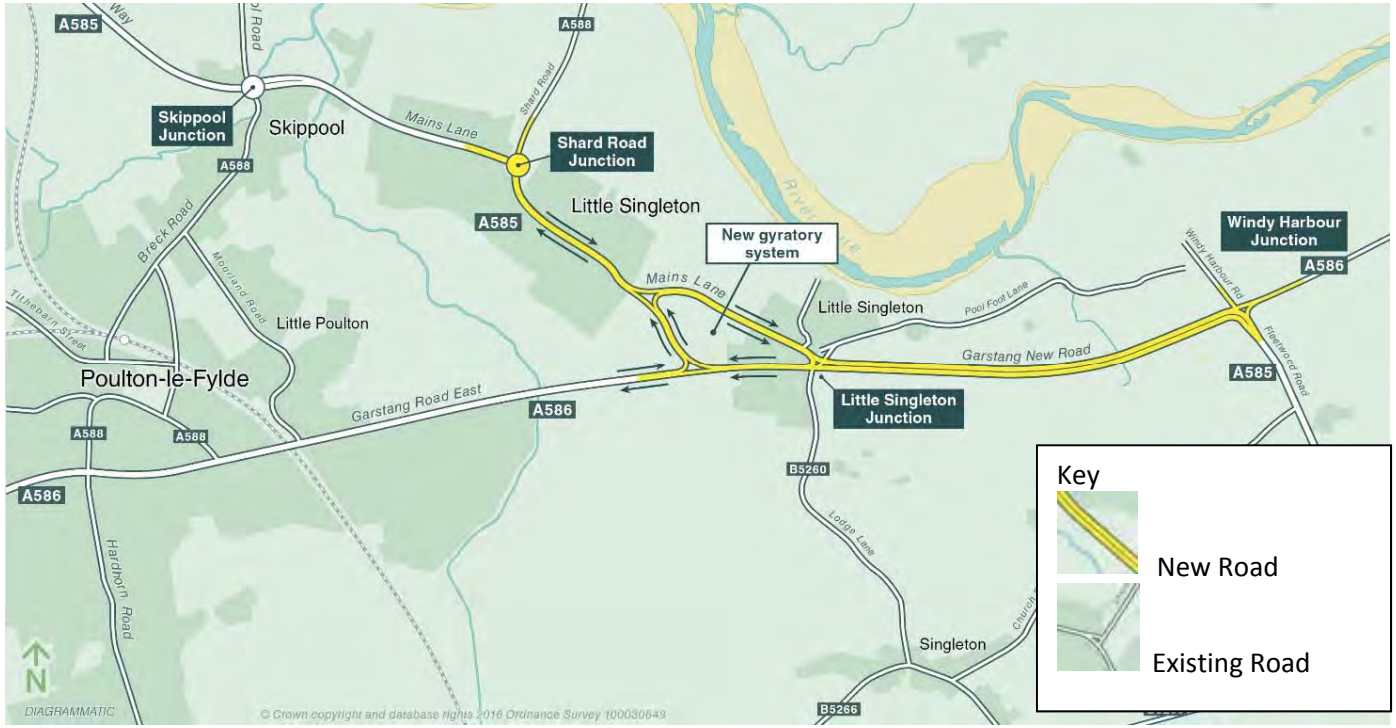
Option / Description	When Rejected	Reasons
Southern Bypass – **Option S3** Single carriageway version of the Scheme	2016	Rejected as would not have had sufficient capacity to cope with predicted future traffic growth and would potentially be less safe than a dual carriageway option. 

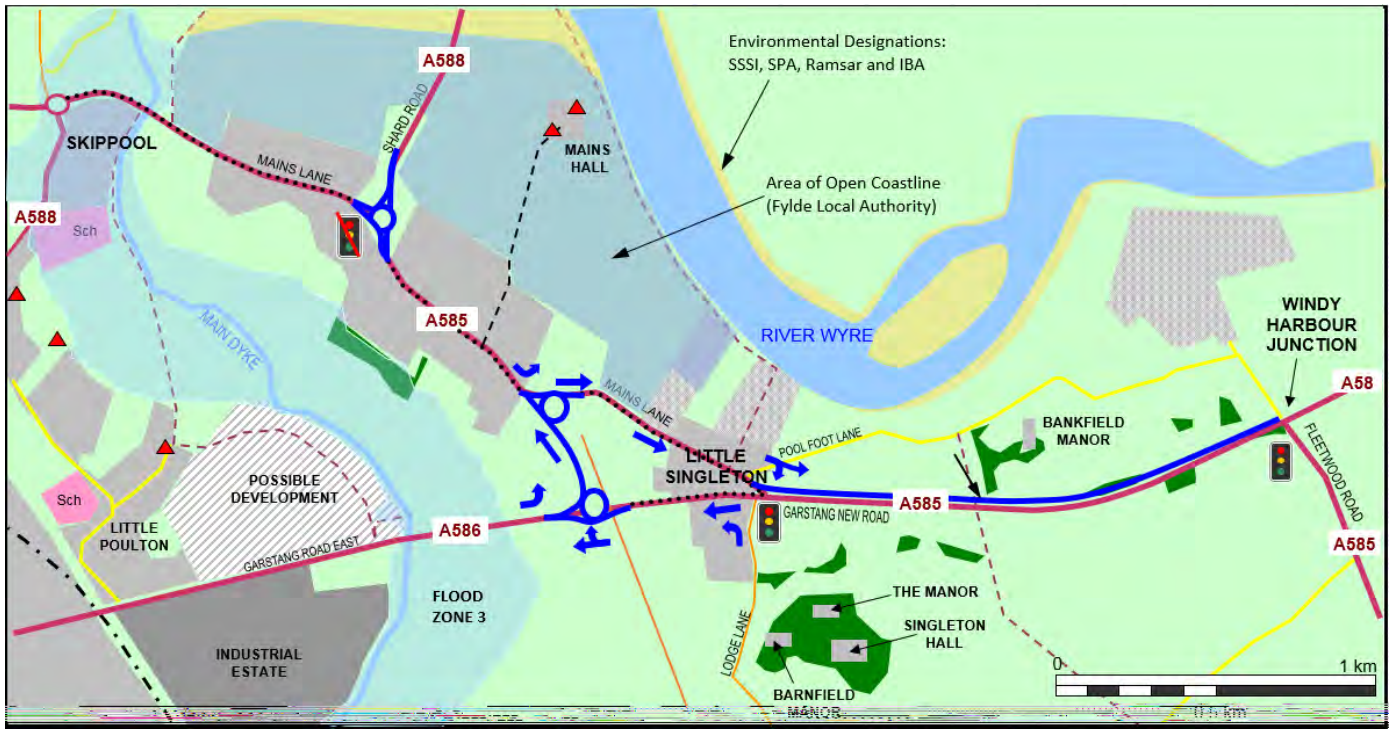
Option / Description	When Rejected	Reasons
Southern Bypass – **Option S4** Single carriageway version of Option S2.	2016	Rejected as would not have had sufficient capacity to cope with predicted future traffic growth and would potentially be less safe than a dual carriageway option. 

Option / Description	When Rejected	Reasons
Southern Bypass – **Option S5** Variation of the Scheme but with section of existing Garstang New Road removed east of Little Singleton with no provision of a junction on the proposed bypass east of Little Singleton. A new link road to the north-west of Little Singleton would be provided between the Poulton Junction and Mains Lane.	2016	Rejected as was similar to the Scheme but included the additional link to the north-west of Little Singleton – therefore reduced journey time benefits. 

Option / Description	When Rejected	Reasons
Northern Bypass – **Option N1** Dual carriageway passing to the north of Mains Lane but re-joining the Scheme route at Poulton junction with the bypass passing under Shard Road and an additional junction at Mains Lane to the north-west of Little Singleton	2016	Rejected as was longer than the Scheme and with an additional junction would have reduced benefits. In addition, the extra structure and cutting would have had increased environmental impacts. 

Option / Description	When Rejected	Reasons
Northern Bypass – **Option N2** As Option N1 but with an at-grade junction with Shard Road.	2015	Rejected as was longer than the Scheme and has two additional junctions which would have reduced benefits. In addition, the two further junctions would have had increased environmental impacts. 

Option / Description	When Rejected	Reasons
Online – **Option O1**	2017	Rejected as it did not meet pre-requisites of the Scheme Objectives. 

Option / Description	When Rejected	Reasons
Online – **Option O2** Variant of Option O1 with roundabouts on the one-way gyratory around Little Singleton.	2015	Rejected as was the gyratory arrangement with roundabouts as was less efficient in dealing with traffic flows than Option O1 and consequently did not meet the Scheme Objectives. 

Option / Description	When Rejected	Reasons
Alternative Southern Bypass (Shown in Red)	2017	Rejected as is longer than the Scheme, with additional structures and costs and with lower user benefits and would result in increased severance of Singleton Park 

4 CONSULTATION

4.1 Introduction

4.1.1 This chapter briefly outlines the consultation that has been undertaken to date in relation to the Scheme's development during the identification and appraisal of options and the consultation that would continue as part of the preparation of the ES for the Scheme.

4.2 Consultation Undertaken to Date

4.2.1 A public non-statutory consultation ran for six weeks from 5 September to 17 October 2016. Publicity for the consultation and exhibitions included:

- 2,300 consultation brochures with questionnaires distributed to deposit points, key stakeholders and properties closest to the Scheme
- 21,000 flyers distributed to properties within 500m of the A585 corridor from the M55 to Fleetwood and the other main local routes leading to the A585
- Notices published in three local newspapers
- Documents, fly-through video and questionnaires on the Highways England website

4.2.2 Three public exhibition events were also held during the consultation period in 2016:

- Friday 16 September, 2pm – 8pm Singleton Village Hall, Station Road, Singleton, FY6 8LL
- Saturday 17 September, 10am – 4pm Singleton Village Hall, Station Road, Singleton, FY6 8LL
- Wednesday 21 September, 4pm – 8pm Wyre Civic Centre, Breck Rd, Poulton-le-Fylde, FY6 7PU

4.2.3 As noted above the 2016 consultation was a non-statutory consultation. This means that there was no statutory basis or requirement for the consultation, and consequently there were no rules or requirements under legislation that the consultation had to meet. Instead, in carrying out the consultation Highways England was influenced by government guidance on consultation, best practice and lessons learned from other major consultations, and the principles for a lawful consultation that have been established by the courts.

4.3 Environmental Consultation

4.3.1 During the options phase, a number of topic specific consultations have been undertaken with various organisations as part of data gathering etc these are discussed in chapters 7-17.

4.3.2 A PEIR would be prepared in the first quarter of 2018. The PEIR would subsequently be consulted upon as part of the statutory consultation as required under Section 42 of Planning Act 2008.

4.3.3 Under section 42 of the Planning Act 2008, the applicant must consult:

- Statutory consultees (i.e. 'prescribed persons' listed in Schedule 1 to the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

- Local authorities prescribed in section 43 of the Planning Act 2008
- The persons prescribed in section 44 of the Planning Act 2008 including owners, lessees, tenants, and those with an interest in the land

4.3.4 Following this, there would be ongoing non-statutory consultation with a range of organisations.

4.3.5 It is also intended that Statements of Common Ground would also be prepared in advance of DCO submission to confirm agreement with as many aspects of the ES as possible.

5 EIA METHODOLOGY

5.1.1 This chapter outlines the purpose and main stages of the EIA process, explains the methodology that would be followed for the EIA for this Scheme, outlines how cumulative effects would be assessed and briefly introduces the process of Habitats Regulations Assessment (HRA) that would also need to be undertaken for the Scheme. The focus of the EIA methodology is to ensure a robust and proportionate approach.

5.2 The EIA Process

5.2.1 The aim of EIA is to protect the environment by ensuring that the decision-maker, when deciding whether to grant permission for a project, which is likely to have significant effects on the environment, does so in the full knowledge of the likely significant effects, and takes this into account in the decision-making process. In general terms, the main stages in the EIA are as follows:

- Data Review - draw together and review available data
- Scoping - identify significant issues and determine the subject matter of the EIA
- Baseline Surveys – collate baseline data, undertake baseline surveys and monitoring to confirm the existing conditions
- Consultation - seek feedback from consultees and the public in relation to key environmental issues, methodology adopted and design approaches
- Assessment and iteration - assess likely effects of the Scheme, evaluate alternatives, provide feedback to design team on adverse impacts, incorporate mitigation, assess effects of mitigated development
- Preparation of the ES and the Non-Technical Summary
- Additionally, during the EIA process opportunities to deliver enhancements would be explored in consultation with appropriate stakeholders

5.3 The EIA Regulatory Context

5.3.1 The legal basis for EIA was formed within the European Community Directive 85/337/EEC which sets out the requirements for the preparation of an EIA for certain types of projects where they are likely to have significant effects on the environment. The original 1985 Directive has been subsequently amended twice and those amendments have been codified in Directive 2011/92/EU in December 2011. This has been further amended by 2014/52/EU.

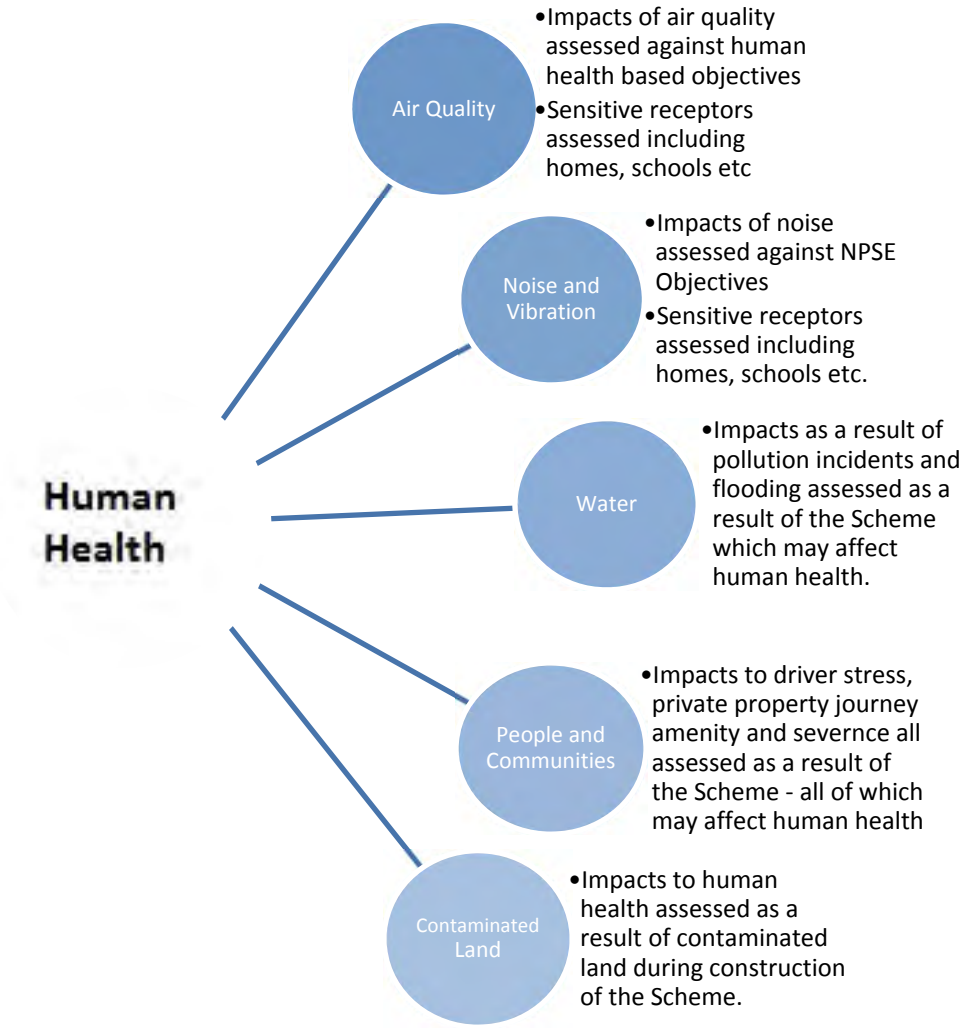
5.3.2 This forms the EIA regime in Europe and was transposed into UK law for NSIPs under the Infrastructure Planning (EIA) Regulations 2017.

5.3.3 The following presents a summary of how the changes to the EIA Regulations have been incorporated:

- An assessment on climate will be reported in a separate ES chapter - refer to Chapter 16: Climate
- An assessment on population will be reported as part of the People and Communities ES chapter
- An assessment on human health will be covered within Air Quality, Noise and Vibration, Road Drainage and the Water Environment, People and Communities

and supplemented with information from Geology and Contaminated Land. Insert 5-1 presents linkages between existing topics and human health

Insert 5-1: Diagram to show how Human Health will be assessed



- An assessment of land will be reported as part of the People and Communities ES chapter
- The ES would identify 'major' events that are relevant to and could affect the Scheme including both man-made and naturally occurring events. Where major events are identified, the ES would describe the potential for any change in the assessed significance of the Scheme on relevant environmental topics in qualitative terms and report the conclusions of this assessment within the individual environmental topics. Mitigation measures would also be described
- Monitoring would be reported within each environmental topic chapter where relevant

5.4 The Planning Act

5.4.1 Part 3 of the Planning Act 2008 and the subsequent amendments to Section 22 of the Planning Act 2008 contained within the Highway and Railway (NSIP) Order 2013, state a scheme can be defined as an NSIP if it consists of highway-related development. A project under this category then needs to meet one of the following criteria.

a) 'construction of a highway in a case within subsection (2),

b) improvement of a highway in a case within subsection (3), or

c) *alteration of a highway in a case within subsection (4).'*

5.4.2 Subsection 2 (below) further defines the clauses that enable the project to meet the above criteria for construction of a highway.

'(2) Construction of a highway is within this subsection only if the highway will (when constructed) be wholly in England and—

a) the highway will (when constructed) be wholly in England,

b) the Secretary of State will be the highway authority for the highway, and

c) the area of development is greater than the relevant limit set out in subsection (4).

5.4.3 Subsection 4 (below) clarifies the limits set out in subsection (2)(c):

(4) For the purposes of subsections (2)(c) and (3)(c) the relevant limit —

a) in relation to the construction or alteration of a motorway, is 15 hectares,

b) in relation to the construction or alteration of a highway, other than a motorway, where the speed limit for any class of vehicle is expected to be 50 miles per hour or greater, is 12.5 hectares, and

c) in relation to the construction or alteration of any other highway is 7.5 hectares.'

5.4.4 As the Scheme would comply with Subsection (4)(b) it satisfies the criteria to be defined as an NSIP and would be treated as a development for which a DCO is required as part 4 of the Planning Act 2008 enacts via the following:

"Consent under this Act ("development consent") is required for development to the extent that the development is or forms part of a nationally significant infrastructure project."

5.4.5 The preparation of an ES was determined to be required through EIA Screening – refer to Section 1.4 and is one of the key stages in the EIA process. PINS, which is responsible for examining an application for development consent, would use this information in making a recommendation to the SoS about whether or not the Scheme should be consented. The SoS would also rely upon the ES in coming to a decision on the application.

5.4.6 In December 2014, the National Road and Rail Networks: National Policy Statement for National Networks (NN NPS) was published. The NN NPS sets out the policy which would be used by PINS and the SoS to make a decision on all major road and rail projects. The Applicant would have regard to this and the preparation of this Scoping Report has been informed by the NPS. The NN NPS would also guide the design of the Scheme.

5.5 Guidance – Design and Assessment

5.5.1 The development of major highways, is governed through guidance and standards set out in 15 volumes of the DMRB.

5.5.2 Environmental design and mitigation guidance is provided within Volume 10 of the DMRB. Volume 11 of the DMRB provides guidance on EIA, including the level of

assessment and reporting of environmental effects. Volume 11, Section 1, Part 1 of the DMRB supplemented by Interim Advice Note (IAN) 125/15 Environmental Assessment Update also identify topics that should be considered when scoping an EIA. Topics include:

- Air Quality
- Cultural Heritage
- Biodiversity
- Landscape
- Noise and Vibration
- People and Communities
- Road Drainage and the Water Environment
- Geology and Contaminated Land
- Materials
- Climate
- Cumulative Effects

5.5.3 In addition, Highways England issues IANs when new guidance emerges which is yet to be incorporated in volumes 1-15 of DMRB.

5.5.4 There have been a number of recent updates to the DMRB in the form of IANs, should any IANs or revisions to DMRB be issued between scoping and reporting of the EIA, they would be used where appropriate.

5.5.5 Where DMRB does not provide topic specific guidance, alternative sources of guidance have been proposed for use in the assessments. More details of the methods to be used for each individual topic are provided in Chapters 7 to 17 of this Scoping Report.

5.5.6 PINS also produce a series of Advice Notes that are intended to inform appropriate parties about a range of process matters in relation to the Planning Act 2008. These advice notes have been reviewed during preparation of this EIA Scoping Report in particular Advice Note 7: Preliminary Environmental Information, Screening and Scoping.

5.6 EIA Expertise

5.6.1 To ensure the completeness and quality of ESs, the EIA Regulations require projects to outline that they have been prepared by a competent expert(s). This information would be provided in the ES.

5.7 Study Areas

5.7.1 The study areas for the Scheme are individually defined for each environmental topic based on the geographical scope of the potential impacts on receptors/resources and the relevant topic specific criteria. The study areas would also rely upon the outcomes of the traffic modelling as some study areas would be defined using changes in traffic flows. The study areas for each topic are further described in Chapters 7 to 17.

5.8 Baseline Data Gathering

5.8.1 In order to assess the impacts on environmental receptors that would be caused by the Scheme, and to identify any potential significant effects, an understanding of the baseline environment without the Scheme is necessary.

5.8.2 To gather a fully comprehensive, descriptive summary of the baseline, each individual topic would need to use data gathering methods which are appropriate to the topic and follow any topic specific guidelines. This would involve conducting desk studies, undertaking specialist surveys as appropriate and engaging with stakeholders both to agree those methods of data collection and also to obtain data they hold. The EIA Scoping Opinion would also inform the data gathering and the surveys that need to be undertaken.

5.8.3 When describing the baseline environmental conditions, it is important to identify the receptors that may be affected by the Scheme and also their 'value' and 'sensitivity'.

5.9 Future Baseline

5.9.1 For each of the environmental topics it is also necessary to project the baseline forwards and consider what changes there may be to the baseline conditions by the time construction of the Scheme commences. This is referred to as the 'Future Baseline' and is considered in each environmental topic chapter.

5.10 Mitigation Measures, Enhancements and Residual Effects

5.10.1 Mitigation of adverse environmental effects would be an iterative part of the Scheme development following the hierarchy below:

- Avoidance – incorporate measures to avoid the effect, for example, alternative design options or modifying the Scheme programme to avoid environmentally sensitive periods
- Reduction – incorporate measures to lessen the effect, for example, fencing off sensitive areas during construction, use of a Construction Environmental Management Plan (CEMP)
- Compensation and/or Remediation – where it is not possible to avoid or reduce a significant effect then offsetting measures should be considered, for example the provision of replacement of habitat to replace that lost to the Scheme

5.10.2 There may be a requirement for a range of mitigation measures and as the Scheme develops these would be discussed with statutory consultees and third parties. Only those mitigation measures that are either a firm commitment or likely to be delivered would be considered in the assessment.

5.10.3 There may also be scope for enhancement measures to be delivered through the Scheme that may not be targeted at a specific adverse environmental impact. These should be identified as beneficial impacts of the Scheme.

5.10.4 Impacts that remain after mitigation are referred to as residual impacts. The assessment of the significance of the residual effects after mitigation is therefore the key outcome of the EIA. Only residual effects would be reported within topic specific chapters within the ES. The paragraphs below outline the assessment process.

5.11 Assessment of Residual Effects

Defining Assessment Years, Scenarios and Phases

5.11.1 The assessment of effects involves comparing the situation with and without the Scheme. Dependent upon the topic, the effects need to be assessed for the Do-Minimum (without the Scheme but with committed development) and Do-Something (with the Scheme and with committed development) scenarios in the baseline year and a future assessment year (for example 15 years after 2022 which is the year of opening for the Scheme) - 2037).

5.11.2 The ES would assess the construction and operation effects of the Scheme. The construction of the Scheme is expected to last two years and this duration would be considered in the assessment. The highway element of the Scheme would have a maximum design life of 40 years.

5.11.3 The Scheme would be designed to maximise the scope for materials re-use in the event of decommissioning of its components, however due to the long design life of the Scheme (40 years for new carriageway), it is not considered appropriate for decommissioning to form part of each environmental topic assessment.

Identifying Residual Impacts

5.11.4 A description of the likely significant environmental effects of the Scheme including the existence of the development, the use of natural resources and the emission of pollutants, the creation of nuisances and the elimination of waste, is required under Schedule 4 of the EIA regulations.

5.11.5 The effects may be negative or positive and can be described as:

- Direct or Primary Impacts: caused by activities which are an integral part of the Scheme resulting in a change in environmental conditions, for example loss of a hedgerow
- Indirect or Secondary Impacts: due to activities that affect an environmental condition or receptor, which in turn affects other aspects of the environment or receptors, for example settlement of a feature as a result of dewatering during construction
- Cumulative: comprising multiple effects from different sources within the Scheme, or in combination with other developments, on the same receptors
- Temporary: effects that would last for a limited duration, for example a closure of a footpath during part of the construction phase

5.12 Assessing Significance

5.12.1 The advice note; DMRB HA 205/08 Assessment and Management of Environmental Effects, defines the criteria for assigning the significance of the environmental effect as a function of the ‘value’ of the receptor and the ‘magnitude’ or ‘scale’ of the impact. This is shown below by Table 5-1 (note Table 5-1 presents an example and may differ between topics and specific guidance for topics).

Table 5-1: Typical Matrix for the Assessment of Significance of Effects (DMRB HA 205/08)

Sensitivity / Value	Magnitude of Impact				
	No Change	Negligible	Minor	Moderate	Major
Very High	Neutral	Very High	Neutral	Very High	Neutral
High	Neutral	High	Neutral	High	Neutral
Medium	Neutral	Medium	Neutral	Medium	Neutral
Low	Neutral	Low	Neutral	Low	Neutral
Negligible	Neutral	Negligible	Neutral	Negligible	Neutral

5.12.2 In arriving at the significance of effect, the assessor would also consider whether the effect is positive or negative, permanent or temporary, direct, indirect, secondary, cumulative, short, medium or long-term as set out in paragraph 5.7.5.

5.12.3 This is the broad approach used when assessing significance of effects. However, for certain topics such as air quality and noise, the above criteria or approach is not used. Instead, environmental impacts can be quantified against thresholds defined using numerical values to identify impacts. This quantification is done through calculations or computer modelling.

5.12.4 Although as a minimum, all impacts are defined according to the following broad descriptors:

- Adverse or beneficial (i.e. they are undesirable effects, or they represent an improvement over the baseline situation)
- Short-term or long-term (This is defined differently dependent on the topic it refers to and the sensitivity of the receptors)
- Construction or operation (i.e. caused by the construction of the Scheme, or by the operation of the Scheme after opening)
- Significant or not significant

5.12.5 The identification of the significance of the effect would differ between topics, with regards to scales, terminology, criteria and the overall approach. Volume 11 of DMRB provides information on determining this for certain topics. However, the specific significance criteria and methods proposed for each topic within the scope of this Scheme are explained further in Chapters 7-17.

5.13 Assessment of Major Accidents and Disasters

5.13.1 Major accidents and disasters would cover the vulnerability of the project to risks of major accidents and/or disasters and consequential changes in the predicted effects of that scheme on environmental topics.

5.13.2 The ES would identify ‘major’ events that are relevant to and could affect the Scheme including both man-made and naturally occurring events. Where Major events are identified, the ES would describe the potential for any change in the

assessed significance of the Scheme on relevant environmental topics in qualitative terms and report the conclusions of this assessment within the individual environmental topics. Mitigation measures would also be described.

5.14 Assessment of Cumulative Effects

5.14.1 The assessment of cumulative effects would identify where two or more sources of impact interact, to give rise to impacts on environmental resources or receptors. There are two types of cumulative effects which are assessed:

- The combined action of interrelated Scheme specific environmental effects causing impacts on a single resource/receptor
- The combined action of the Scheme and other planned developments environmental effects in combination on a single resource/receptor

5.14.2 The approach to assessing cumulative effects is based upon the Cumulative Effects Assessment (CEA) PINS Advice Note 17. This sets out a staged process for CEA in NSIPs. The scope of the approach and how it would be applied to this Scheme is provided in Chapter 17: Cumulative Effects.

5.15 Equalities Impact Assessment

5.15.1 In England and Wales, the Equality Act 2010 places a duty on the applicant to ensure that equality is considered as part of their service delivery. This means there are duties to ensure the SRN is accessible, and that economic and social opportunities are maximised for all users.

5.15.2 The Equality, Diversity and Inclusion sifting Tool, (EDIT) is a tool that has been used to help the Applicant's project teams make an informed decision about the extent to which equality, diversity and inclusion (EDI) are relevant to the Scheme.

5.15.3 It is considered that EDI issues are likely to be a factor in the effective delivery of the Scheme. Therefore, an Equality Impact Assessment (EqIA) would be prepared in parallel to the ES.

5.15.4 Highways England currently uses EqIA to assess schemes considered likely to have a disproportionate impact on different sections of society. EqIA, when used in conjunction with EDIT, provides a good way of evidencing the decision-making processes to support compliance with the Equality Act 2010 and Public Sector Equality Duty.

5.16 Habitats Regulations Assessment

5.16.1 A HRA Screening Report was prepared during the options stage in August 2017 and consultation was undertaken with Natural England. The purpose of the HRA Screening Report was to determine Likely Significant Effects on European Sites as a result of the Scheme.

5.16.2 The HRA Screening Report identified the following European Sites potentially affected by the Scheme (refer to Figure 9.1 at Appendix A for the location of the sites listed below):

- Morecambe Bay and Duddon Estuary SPA
- Morecambe Bay Ramsar site

5.16.3 During the options stage and following a single year of bird surveys the data suggested that there would be no direct effect on the Morecambe Bay and Duddon

Estuary SPA or the Morecambe Bay Ramsar site, or on qualifying interests while they are using the European Sites.

5.16.4 However, further desk studies, wintering bird / passage bird surveys and stakeholder engagement (with Natural England) is required to be undertaken alongside the ES to inform the HRA which will accompany the DCO application.

6 TOPICS AND ELEMENTS OF TOPICS TO BE SCOPED IN AND OUT

6.1 Topics Scoped In and Out

6.1.1 During the options phases, Highways England prepared non-statutory EARs to help select the preferred option. The EARs characterised the existing baseline by environmental topic and provided an assessment of environmental effects as a result of each option in accordance with DMRB. This process has greatly contributed to the development of the scope of the forthcoming ES.

6.1.2 Based on the options assessment work it is considered 'materials' can be scoped out of the ES in addition to some themes of certain topics. Although it is proposed that 'materials' is scoped out of the ES a chapter is still proved within this Scoping Report to provide detailed background and justification.

6.1.3 Detailed justification for the scope of assessment for each topic is provided within Chapters 7 – 17 and a summary is provided in Table 6-1. Note: where relevant Table 6-1 identifies whether assessments would be detailed or simple in accordance with the DMRB, however, this is not defined within the DMRB for all topics.

Table 6-1:Topics to be scoped in and out with justification

Topic	Themes Scoped into the ES	Themes Scoped out of the ES
Air Quality	An air quality assessment as set out in the DMRB would be undertaken in the ES. The assessment would cover air quality effects (NO_2 and PM_{10}) during operation on sensitive receptors.	It is proposed that air quality effects as a result of construction are scoped out of the assessment as significant effects are unlikely, based on previous experience. Any construction air quality effects would be mitigated through a CEMP. For completeness, the map required by para 3.45 of HA 207/07 presenting sensitive receptors within 200m of the construction site, along with good practice mitigation, would be appended to the ES. In accordance with DMRB, $PM_{2.5}$ would not be reported.
Cultural Heritage	A simple assessment in accordance with HA/208/07 of the DMRB would be undertaken in the ES and focus on effects on the un-designated assets Ribchester to Poulton Roman Road (and potential associated archaeological remains) and Singleton Park. The assessment would cover effects both during construction and operation.	It is proposed that effects on the historic landscape are scoped out of the assessment as significant effects are unlikely, based on work undertaken during the options phase. The options assessments identified a slight adverse effect on historic landscape character which is not significant. Based on work carried out in the options phase, it is not anticipated that there would be significant effects on designated heritage assets. The largest effect on statutory heritage assets identified was a slight adverse effect to the Grade II listed Ice House at Singleton Hall located approximately 100m from the Scheme. Effects were slight due to the existing screening by vegetation and trees between the asset and the Scheme which means that the setting of this asset does not extend to the Scheme. Designated heritage assets would be included in the dataset in the Desk-Based Assessment for completeness, but impacts would not be reported in the ES unless further assessment identifies that they have settings that extend to the Scheme.

Topic	Themes Scoped into the ES	Themes Scoped out of the ES
Biodiversity	The assessment reported in the ES would be a detailed assessment and cover both the construction and operation phases for the following receptors: • Morecambe Bay and Duddon Estuary SPA • Morecambe Bay Ramsar site • Wyre Estuary SSSI • Wyre-Lune rMCZ • Skippool Marsh and Thornton Bank BHS • Shard Bridge Field Ditch BHS • River Wyre – Upper Tidal Section BHS • Deciduous woodland S41 Habitat • Hedgerow Section 41 of the Natural Environment and Rural Communities Act 2006 (S41) Habitat • Coastal Saltmarsh & Mudflats S41 Habitat	Based on data generated to date, through desk studies and targeted surveys, it is considered likely that the following species are absent from the survey area and are therefore scoped out of further assessment: • Reptiles • Water Vole The additional features below, may be present within the study area; however, due to their local status and low value, or distance from the Scheme, significant effects are very unlikely; these features are therefore scoped out of further assessment: • Reptiles • Water Vole The additional features below, may be present within the study area; however, due to their local status and low value, or distance from the Scheme, significant effects are very unlikely; these features are therefore scoped out of further assessment: • River Wyre – S41 Habitat • Other (non-S41) Habitats • Aquatic Invertebrates • Terrestrial Invertebrates • Badger • Brown Hare • Hedgehog • Fish

Topic	Themes Scoped into the ES	Themes Scoped out of the ES
	• Coastal and Floodplain Grazing Marsh S41 Habitat • Ponds S41 Habitat • Skippool Creek • Main Dyke • Other Rivers S41 Habitat • Great Crested Newts • Wintering/passage birds • Breeding birds • Bats • Otter	• Other Amphibian Species (i.e. not Great Crested Newts) • Invasive Flora • Protected and Notable Plants (including Fungi) Note: Agreement is currently being sought from Natural England regarding the elements proposed to be scoped out of further assessment.
Landscape	Detailed assessment of effects on landscape, townscape and visual amenity. The assessment would cover both construction and operation.	No themes are scoped out at this stage.
Noise and Vibration	A detailed assessment would be undertaken covering construction and operation.	No themes are scoped out at this stage.
People and Communities	The construction effects of the Scheme would be considered in relation to land use (loss of	No People and Communities themes have been scoped out at this stage.

Topic	Themes Scoped into the ES	Themes Scoped out of the ES
	agricultural land) and change to journey length and pattern. The operational effects of the Scheme would be considered in relation to: • Journey length and pattern • Journey amenity • New severance • Relief from existing severance • View from the road • Driver stress	
Road Drainage and the Water Environment	The assessment would cover effects on flooding, surface water drainage and groundwater levels/flows during construction and operation. It would also cover operation groundwater quality and surface water quality effects.	Based on the work undertaken to date during the options phase no significant effects are anticipated on surface water quality during construction. During construction of the Scheme adverse effects on the water quality and flow conveyance attributes of surface water receptors would be avoided by implementation of a CEMP documenting best practice pollution prevention measures and construction site drainage management proposals. Therefore, it is proposed that assessment of construction impacts are scoped out of the ES.
Geology and Contaminated Land	The main impact is likely to be from contaminated land and potential effects on hydrogeology. These would be dealt with via the application of mitigation measures designed and implemented during the construction phase. It is, therefore, proposed that	As there is little geological interest within the study area it is proposed geology is scoped out of further assessment. It is proposed to scope out all operational impacts of the Scheme. Once constructed the road itself would act as a barrier to underlying ground conditions and road users (considered to be low value) would not come into contact with it on a day to day basis.

Topic	Themes Scoped into the ES	Themes Scoped out of the ES
	only construction impacts of the Scheme associated with contaminated land would be assessed within the ES. A simple assessment approach would be used however, it would be supplemented with Ground Investigation information once it becomes available.	Note: Soils are not covered within this chapter they are covered under 'People and Communities'.
Materials	N/A	No significant effects are anticipated as a result of this topic. It is, therefore, proposed that information regarding waste and materials during construction would be included within the Scheme Description of the ES. This text would include how waste would be managed through the design process and specialists would assess this information within topic specific chapters where relevant. In addition, it is anticipated that only minor quantities of operation waste would be produced during the lifetime of the Scheme, therefore, it is proposed that an assessment of operational waste would be scoped out of the assessment.
Climate	The assessment of Greenhouse Gasses Emissions would consider the following: Construction: • Transport of construction materials from the factory gate to the construction site • Construction processes	Climate change adaptation - The vulnerability of the scheme to climate change and incorporation of appropriate adaptation measures into the scheme design will be part of the iterative design process. A risk assessment will be undertaken in conjunction with the design team and the details of this risk assessment will be reflected in the scheme description that will be subsequently assessed in other environmental topic chapters. The following would be excluded from the Greenhouse Gas Emissions assessment –

Topic	Themes Scoped into the ES	Themes Scoped out of the ES
	Operation: • Carbon sequestration from tree planting • Operation of the Scheme • Maintenance, repair, replacement and refurbishment	Construction: • Product manufacturing • Preliminary desk-based studies • Transport of construction plant equipment to and from site Operation: • Operational water use • Other operational processes.
Cumulative Effects	The assessment would cover the following effects: Intra-Scheme Effects – The combined action of a number of different environmental topic specific effects upon a single resource/receptor. Inter-Scheme Effects – The combined action of a number of different projects, in combination with the project being assessed, on a single resource/receptor.	N/A
Heat and Radiation	This topic is not relevant to the construction of this Scheme and therefore has been scoped out. The Scheme would not introduce any sources of radiation, and would generate limited amounts of heat from minor elements such as lighting.	

7 AIR QUALITY

7.1 Introduction

7.1.1 This chapter outlines the proposed scope of work for the assessment of the Scheme on local air pollutant emissions and potential effects on air quality. The aims of this Chapter are to:

- Define the study area
- Detail the requirements of the NN NPS for the assessment
- Present the consultations undertaken and proposed
- Explore the baseline information that has been collected and provide information on further baseline information to be collated through desk study or surveys
- Identify the value of environmental resources and key receptors
- Outline the potential significant effects that would occur and describe the potential mitigation measures
- Describe proposed level and scope of assessment
- Detail the methodology that would be used to assess effects on air quality
- Identify any assumptions and limitations

7.1.2 Key pollutants in relation to road assessments are nitrogen dioxide (NO_2) and particles (PM_{10}). These pollutants are most important in relation to human health and NO_2 in particular, being the pollutant that results in the most difficulty in achievement of Air Quality Strategy Objectives (AQSO) and European Union (EU) Limit Values.

7.1.3 There may be interrelationships related to the potential effects on air quality and other disciplines. Therefore, please refer to the following chapters:

- Chapter 9: Biodiversity.

7.2 Study Area

7.2.1 The local and regional (in accordance with TAG Unit A3) study area would be defined by the changes in traffic flows on the local road network. The criteria outlined in Paragraph 3.12 to 3.16 of the DMRB HA207/07 would be used to identify roads likely to be affected. The following would be used to determine the extent of the air quality study area:

- Road alignment would change by five metres or more
- Daily traffic flows would change by 1,000 Annual Average Daily Traffic (AADT) or more
- Heavy Duty Vehicle (HDV) flows would change by 200 AADT or more
- Daily average speeds would change by 10 kilometre/hour or more
- Peak hour speed would change by 20 kilometre/hour or more

7.3 NN NPS Requirements

7.3.1 Air quality aspects of the NN NPS are presented in Paragraphs 5.3 through to Paragraph 5.15. The NN NPS provides guidance on what should be included in the ES and provides advice to the SoS in order for them to determine whether a scheme should receive consent.

7.3.2 EU Limit Values (as laid out in the Air Quality Standards Regulations 2010) are the same as the UK National AQS Objectives, which are set out in the Air Quality (England) Regulations 2000, the Air Quality (England) (Amendment) Regulations 2002. Both the EU Limit Values and AQS Objectives applicable to this assessment (key traffic related pollutants) are presented in Table 7-1.

Table 7-1: Air Quality Strategy Objectives for Human Health

Air Quality Objectives and European Directives for the protection of human health					
Air Quality Strategy Objectives				EU Limit Values	
Pollutant	Concentration	Averaging Period	Compliance Date	Concentration	Compliance Date
NO_2	200 µg.m^{-3}	1-hour mean (not to be exceeded more than 18 times per year)	31 December 2005	200 µg.m^{-3} (18 Exceedances)	1 January 2010
	40 µg.m^{-3}	annual mean	31 December 2005	40 µg.m^{-3}	1 January 2010
PM_{10}	50 µg.m^{-3}	24-hour mean (not to be exceeded more than 35 times per year)	31 December 2010	50 µg.m^{-3} (35 Exceedances)	1 January 2005
	40 µg.m^{-3}	annual mean	31 December 2004	40 µg.m^{-3}	1 January 2005

7.4 Consultation Undertaken and Proposed

7.4.1 The air quality baseline data collection during the options phase involved consultation with Fylde Borough Council and Wyre Borough Council listed in Table 7-2. Monitoring data for the years 2012 to 2016 was requested from each local authority. For the ES these local authorities would be contacted again to obtain the

most recent air quality monitoring data.

Table 7-2: Details of consultations which have been undertaken and proposed

Consultations Undertaken	Date	Information Obtained	Consultation Proposed
Wyre Borough Council	12/05/2017	Air quality monitoring data	Request updated monitoring data
Fylde Borough Council	12/05/2017		

7.5 Baseline Information

Baseline Information Obtained and Surveys Undertaken

7.5.1 The baseline air quality information in the locality of the Scheme was collected at the options stage from Fylde Borough Council and Wyre Borough Council and would be updated where necessary for the ES.

Fylde Borough Council

7.5.2 A review of the information held on Defra's website, and the Fylde Borough Council website indicates that no Air Quality Management Areas (AQMAs) have been designated within the Fylde.

7.5.3 Air quality monitoring results contained within the Fylde Air Quality Progress Reports, Updating and Screening Assessments and Air Quality Annual Status Report do not report any exceedances of the AQS objectives from the monitoring results.

Wyre Borough Council

7.5.4 A review of the information held on Defra's website, and the Wyre Borough Council website indicates that there is one AQMA (Chapel Street AQMA) designated within the air quality study area, approximately 1.2km south-west of Skippool Junction (displayed in Figure 7.1 at Appendix A). The Chapel Street AQMA in Poulton-Le-Fylde has been declared by Wyre Borough Council for the exceedance of the annual mean NO_2 AQS Objective as a result of traffic emissions, congestion and the locality of buildings preventing dispersion of air pollutants.

7.5.5 Air quality monitoring results contained within the Wyre Air Quality Progress Reports and the Updating and Screening Assessments do not report on exceedances outside of the AQMA or within the close proximity of the Scheme. The Wyre Air Quality Action Plan recommended considering the extension of the Chapel Street AQMA to the north to encompass Breck Street, however, recent monitoring results concluded that an extension of the AQMA was not necessary. Monitoring of pollutants by Wyre Borough Council in this area is on-going. The Scheme is located close to the proposed AQMA and therefore does have the potential to affect traffic flows within the AQMA. This would be assessed further as part of the ES.

Highways England Air Quality Monitoring

7.5.6 Highways England undertook air quality monitoring for a six-month period between December 2013 and June 2014 along Fleetwood Road / Garstang New Road close to the Windy Harbour Junction (refer to Figure 7.1 at Appendix A), the six months

of monitoring indicated that concentrations of nitrogen dioxide (NO_2) were well below the air quality strategy objectives/EU Limit Values, with the maximum concentration recorded being 26µg/m³ on Fleetwood Road approximately 250m south of the Windy Harbour Junction.

7.5.7 The air quality monitoring from the local authorities and Highways England illustrates that generally air quality does not exceed the air quality strategy objectives/EU limit Values for the main traffic related pollutant, NO_2.

Defra EU Compliance Reporting

7.5.8 Defra is responsible for reporting on the UKs compliance with the EU Directive on ambient air quality (2008/60/EC). The UK is split into a number of zones / agglomerations for the purpose of the reporting, a zone is deemed compliant with the Directive when pollutants are predicted or measured to be below the EU Limit Values. Defra currently undertakes modelling using their Pollution Climate Mapping (PCM) model. Defra chooses representative links in the zone to predict pollutant concentrations. The Scheme is located in two of these areas the North West and Merseyside zone and the Blackpool Urban area. There are PCM modelled links on the following roads:

- A588 Shard Road
- The A585 from its junction with the A588 (Shard Road) to its junction with the B5412 (Skippool junction)
- The A588 Breck Road from Skippool junction to the A586 Garstang Road East, south of the study area
- The urban section of the A586

7.5.9 All road network links surrounding the Scheme have annual NO_2 concentrations well below the EU Limit Value, therefore the Scheme is considered unlikely to impact on compliance with the directive in the opening year. Defra is in the process of updating the PCM modelling following the high court challenge. However, given how low the concentrations are the PCM links in the vicinity of the Scheme it is unlikely that they would exceed in the updated model. This would be confirmed in future assessments when the PCM data has been published.

7.6 Value of Environmental Resources and Receptors

Air Quality Criteria

7.6.1 For the pollutants of concern (NO_2 and PM_{10}), there are two sets of ambient air quality criteria for the protection of public health, namely those set by the EU and transposed in to UK law by The Air Quality Standards Regulations 2010 and those implementing the UK National AQS.

7.6.2 The criteria set out in the AQS include standards and objectives for local authorities to work towards achieving. These apply in locations with relevant public exposure which are defined in the LAQM.TG (16).

7.6.3 The standards set by the EU are legally binding, mandatory limit values (LV) requiring national Government compliance. Failure in compliance (for a compliance agglomeration zone) can lead to infraction proceedings by the EU against the Member State.

7.6.4 Local air quality criteria relevant to the air quality assessment for the Scheme are summarised in Table 7-1. It should be noted that $PM_{2.5}$ has not been reported in accordance with DMRB.

Receptors

7.6.5 Receptors that are potentially sensitive to changes in air quality are defined in DMRB HA207/07 as housing, schools, hospitals and designated species or habitats within a designated ecological site, located within 200m of the Affected Road Network (ARN) or construction sites.

7.7 Potential Effects including Mitigation Measures

Construction

7.7.1 There is some potential for adverse effects during the construction of the Scheme in relation to construction dust and vehicle emissions. However, any effects on air quality would be temporary (i.e. during the period of the construction works only) and would be suitably minimised by the application of standard and appropriate mitigation measures outlined within the CEMP.

Operation

7.7.2 The Scheme has the potential to affect local air quality, during operation in the following ways:

- Air quality could be affected (positively or negatively) by changes in vehicle activity (flows, speeds and composition) as a result of the Scheme
- Air quality could also be affected by any changes to the distance between sources of emissions and air quality sensitive receptors, both from the bypass and from changes to the existing road network

7.7.3 The results of the modelling undertaken at the options stage predicted that none of the receptors exceeded the AQS Objectives for NO_2 or PM_{10}. The options assessment indicated the Scheme is unlikely to lead to significant impacts on air quality. However, this would be confirmed because the traffic data is to be updated.

Mitigation Potential – Construction

7.7.4 Mitigation measures to control dust and emissions would be required during the construction phase and outlined in the CEMP.

Mitigation Potential - Operation

7.7.5 Should a significant impact be assessed in accordance with IAN 174/13, a Scheme Air Quality Action Plan would be required to reduce the Scheme impacts, however based on the options assessments this is considered unlikely.

7.8 Proposed Level and Scope of Assessment

7.8.1 An assessment as set out in DMRB would be undertaken in the ES.

7.8.2 Only operation air quality impacts of the Scheme would be assessed as it is considered construction effects would be mitigated through a CEMP. It is proposed that air quality effects as a result of construction are scoped out of the assessment as significant effects are unlikely. For completeness, the map required by para 3.45 of HA 207/07 presenting sensitive receptors within 200m of the construction site

along with good practice mitigation would be appended to the ES.

7.9 Proposed Methodology Including Significance

Guidance

7.9.1 Potential effects on local air quality resulting from the operation of the Scheme would be assessed in accordance with the guidance outlined in DMRB HA207/07, associated IANs and Defra's Local Air Quality Management Technical Guidance (LAQM.TG (16)). Relevant guidance documents are listed below:

- HA207/07 DMRB Volume 11, Section 3, Part 1, May 2007
- IAN 170/12 v3 Updated air quality advice on the assessment of future NOx and NO2 projections for users of DMRB Volume 11, Section 3, Part 1 'Air Quality, November 2013 (or latest update available at the time of the assessment)
- IAN 174/13 Updated advice for evaluating significant local air quality effects for users of DMRB Volume 11, Section 3, Part 1 Air Quality (HA207/07), June 2013 (or latest update available at the time of the assessment)
- IAN 175/13 Updated advice on risk assessment related to compliance with the EU Directive on ambient air quality and on the production of Scheme Air Quality Action Plans for users of DMRB Volume 11, Section 3, Part 1 Air Quality (HA207/07), June 2013 (or latest update available at the time of the assessment)
- IAN 185/15 Updated traffic, air quality and noise advice on the assessment of link speeds and generation of vehicle data into 'speed-bands' for users of DMRB Volume 11, Section 3, Part 1 'Air Quality and Volume 11, Section 3. Part 7 Noise (January 2015)
- Defra's Local Air Quality Management Technical Guidance (LAQM.TG(16)), where appropriate

7.9.2 The DMRB guidance requires a number of different types of assessments to be undertaken including:

- Local air quality assessment (predicting concentrations of pollutants for comparison against the AQS Objectives at sensitive receptors e.g. residential, schools and ecological sites, with and without the Scheme)
- Regional assessment (change in emissions as a result of the Scheme including carbon)
- WebTAG assessment (overall change in exposure as a result of the Scheme)
- Assessment of the risk of the Scheme impacting on the UK's ability to comply with the EU Air Quality Directive (EU Limit Values)

7.9.3 As required by the DMRB the air quality assessment should be based on the most likely forecast traffic flows.

Proposed Assessment Methodology

Operation Phase - Local Air Quality Assessment

7.9.4 The Atmospheric Dispersion Modelling System (ADMS-Roads) software would be used to determine the effect of Scheme.

7.9.5 The key scenarios to be modelled are:

- The existing base situation, which would be used for model verification purposes
- Do-Minimum Scenario, which assumes that the Scheme would not be in operation in the opening year but accounts for committed developments in the future (expected to be 2022)
- Do-Something Scenario, which assumes that the Scheme would be in operation in the opening year and also accounts for committed developments in the future (expected to be 2022)

7.9.6 The local air quality assessment compares current and predicted air quality concentrations against the AQS Objectives as presented in Table 7-1. To determine whether the Scheme would have a significant impact on air quality, the local assessment results are utilised in accordance with IAN 174/13.

7.9.7 The air quality assessment determines whether the Scheme would lead to significant effect on air quality (i.e. does the Scheme lead to a significant impact on air quality at individual properties?) and EU Limit Values (would the Scheme impact on Defra's plans to achieve compliance with the Limit Values?).

7.9.8 The local air quality results are also used to assess whether the Scheme represents a risk to compliance with the EU Ambient Air Quality Directive. The assessment utilises information published by Defra (namely their PCM modelled data) to determine whether compliance with the EU Limit Values would be affected by the Scheme in accordance with IAN 175/13.

7.9.9 AQS Objectives are assessed at a more local level where an AQMA can be designated as a result of exceedance at individual properties. The local air quality assessment is undertaken to determine whether the Scheme's impacts on AQS Objectives are considered significant (in accordance with IAN 174/13).

Regional Assessment

7.9.10 The regional assessment is a requirement of DMRB and is undertaken to determine the change in emissions as a result of the Scheme. The regional emissions of NOx are also used in the WebTAG appraisal to determine the economic value of changes in air quality as a result of the Scheme for the purposes of the Scheme's business case.

7.9.11 The assessment of the contribution of the Scheme to regional air quality is based on the total annual emission of pollutants over the road network. The pollutants considered are:

- NO_x
- PM_{10}
- Carbon Dioxide (CO_2)

7.9.12 The latest version of the Defra Emission Factor Toolkit (EFT) would be used in the regional assessment calculations which uses the traffic characteristics (flows, average vehicle speeds and percentage HDVs for each period) and road length for each affected road in the study area.

WebTAG appraisal (plan level)

7.9.13 The DMRB states that the assessment of air quality in relation to highways schemes should also report the results of local air quality WebTAG appraisal (plan level), as completed in line with the guidance set out by the Air Quality Sub Objective, TAG Unit A3.

7.9.14 The plan level methodology within the WebTAG guidance aims to quantify the change in exposure at properties in the opening year as a result of schemes. This is done by calculating the change in concentrations at receptors adjacent to all roads included in the ARN as determined for the local air quality assessment. The methodology follows several steps including:

- Identification of the ARN, which is the same as the DMRB local air quality affected road network
- Calculation of an overall assessment score for NO_2 and PM_{10}

7.9.15 The results of the WebTAG assessment are reported in the ES and used in the Scheme's Business Case.

Study Area for the Air Quality Assessment

7.9.16 Refer to Section 7.2.

Assessment Periods/Scenarios

Operation

7.9.17 In accordance with DMRB the opening year (2022) would be used to undertake the predictions for the Local Assessment. The opening year is assessed as it represents the worst case in terms of air quality as a result of newer vehicles entering the fleet in the future.

7.9.18 In addition to the opening year the regional assessment would utilise the design year traffic data to generate emissions that would be reported in the ES.

Future Baseline

7.9.19 The future baseline (i.e. the Do Minimum scenario) would utilise the traffic data provided by the traffic team for the opening year. Highways England provides a template indicating the format in which the traffic data needs to be delivered for utilisation in the dispersion model.

7.9.20 The traffic data would be entered into the latest version of the Defra EFT to generate emissions for the traffic flows in the opening year 2022 which are included in the air quality model to predict pollutant concentrations in the opening year.

7.9.21 As there is evidence showing that emissions from vehicles, particularly diesels, do not perform to their prescribed European emission standards it is now agreed amongst many air quality professionals that future predictions of NO_2 concentrations may be underestimated based on the use of the Defra modelling tools alone. Highways England issued advice in IAN 170/12v3 which is to be followed when undertaking assessments in accordance with DMRB. The latest version of this advice would be used to ensure that the future baseline projections presented in the air quality assessment ensuring that the modelling is not overly optimistic.

7.9.22 Whilst there is an expectation that there would be a substantial improvement in real

world emissions from Euro 6/VI vehicles compared to previous Euro Standards, the IAN makes allowance for potential under-estimates in the emissions from the latest Euro 6/VI vehicles currently entering the UK fleet.

Significance Criteria

7.9.23 The guidance in IAN174/13 would be used to determine whether the Scheme impacts are considered significant. It is noted that there are other guidance documents in relation to the evaluation of significance in air quality assessments, namely the Institute of Air Quality Management (IAQM) Land-Use Planning and Development Control: Planning for Air Quality January 2017. The IAQM guidance makes clear, however, that it is not appropriate to follow this methodology in the context of road schemes.

7.9.24 IAN 174/13 provides the framework and methodology for using the outputs from the air quality model at sensitive receptors to determine whether an impact is significant. Should a significant impact be assessed that cannot be mitigated, the NN NPS directs the decision maker to give substantial weight to air quality impacts when determining whether a scheme should be granted consent. The IAN was prepared in order to determine the significance of air quality effects and establish whether a significant impact is triggered for the purposes of paragraph 5.12 of the NN NPS (as discussed in the NN NPS section of this report).

7.9.25 IAN 174/13 of this assessment requires that those receptors which are predicted to exceed the AQS Objectives in the opening year either with or without the Scheme are used to inform the evaluation of significance. The change in air pollutant concentrations predicted at these receptors (either an improvement or deterioration), is relevant to the determination of whether the Scheme impacts are significant.

7.10 Assumptions and Limitations

7.10.1 Air quality modelling undertaken to inform the ES would be based on the A585 traffic model and its assumptions.

8 CULTURAL HERITAGE

8.1 Introduction

8.1.1 This chapter details the proposed scope of work for the assessment of the Scheme's potential effects on cultural heritage. The aims of this chapter are to:

- Define the study area
- Detail the requirements of the NN NPS for the assessment
- Present the consultations undertaken and proposed
- Explore the baseline information that has been collected and provide information on further baseline information to be collated through desk study or surveys
- Identify the value of environmental resources and key receptors
- Outline the potential significant effects that would occur and describe the potential mitigation measures
- Describe proposed level and scope of assessment
- Detail the methodology that would be used to assess effects on heritage assets
- Identify any assumptions and limitations

8.1.2 There may be interrelationships related to the potential effects on cultural heritage, and other disciplines comprising:

- Chapter 10: Landscape
- Chapter 11: Noise and Vibration
- Chapter 13: Road Drainage and the Water Environment
- Chapter 14: Geology and Contaminated Land

8.2 Study Area

8.2.1 The study area encompasses an area extending 1km from either side of the Scheme and is presented on Figure 8.1 at Appendix A. The size of the area was chosen based on a combination of the requirements of the DMRB Volume 11 Section 3 part 2 and professional judgement.

8.3 NN NPS Requirements

8.3.1 The NN NPS defines considerations around the historic environment and heritage assets, both designated and non-designated, including requirements to assess their significance including any contribution made by the setting. Assessment should be based on documentary research, desk-based assessment, and where necessary field evaluations.

8.3.2 It outlines that the SoS should consider the impact a Scheme on heritage assets, giving great weight to the assets' conservation and taking into account the desirability of sustaining and, where appropriate, enhancing the significance of said heritage assets, the contribution of their settings and the positive contribution that their conservation can make to sustainable communities - including their economic viability. The Secretary of State should also take into account the desirability of new

development making a positive contribution to the character and local distinctiveness of the historic environment.

8.3.3 The NN NPS outlines that any harmful impact on the significance of a designated heritage asset should be weighed against the public benefit of development, recognising that the greater the harm to the significance of the heritage assets, the greater the justification that would be needed for any loss.

8.4 Consultation Undertaken and Proposed

8.4.1 To date consultation has been undertaken with the Lancashire Historic Environment Record to obtain details of non-statutory heritage assets. Details of consultation undertaken to date and proposed consultation is presented in Table 8-1.

Table 8-1: Details of consultations which have been undertaken

Consultations Undertaken	Date	Information Obtained
Lancashire Historic Environment Record	2015	Details of non-designated heritage assets.
Consultations Proposed	**Date**	**Information to be Obtained**
Historic England	End of 2017 / early 2018	Details of heritage assets within the defined study area.
Lancashire Historic Environment Record	End of 2017 / early 2018	Details of heritage assets within the defined study area.
Wyre Borough Council	End of 2017 / early 2018	Details of heritage assets within the defined study area.
Fylde Borough Council	End of 2017 / early 2018	Details of heritage assets within the defined study area.

8.5 Baseline Information

Baseline Information Obtained/Surveys Undertaken

8.5.1 During the options assessment, the following baseline data was obtained:

- National Heritage List of England (designated heritage assets)
- Lancashire Historic Environment Record (non-designated heritage assets and historic landscape character data)
- Wyre Borough Council (Conservation Areas)
- Fylde Borough Council (Conservation Areas)

Other Baseline Information to be Obtained

8.5.2 To inform the ES and the Desk Based Assessment (DBA) a heritage walkover survey would be undertaken within the study area. In addition, the organisations contacted during the options appraisal would be consulted to obtain the most up to date information held.

8.6 Value of Environmental Resources and Receptors

8.6.1 An assessment of the value of heritage assets within the study area was undertaken

during the options appraisal based on the guidance provided in DMRB HA208/07 to establish the value for heritage assets.

8.6.2 This assessment determined the following receptors and values within the study area: Note the value is based on a five-point scale of Very High, High, Medium, Low, Negligible, and Unknown, according to the guidance provided.

- 0 Grade I or II* Listed Building with a very high / high value
- 14 Grade II Listed Buildings with a medium value
- 59 non-statutory heritage assets with a medium value
- 145 non-statutory heritage assets with a low value

8.6.3 The historic landscape character of the study area includes sand and mud flats, ancient enclosure, post-medieval enclosure, ancient and post-medieval settlement, modern settlement and modern recreation and exhibits a relatively high degree of time-depth – medium value.

8.6.4 The location of heritage assets is presented on Figure 8.1 at Appendix A.

8.7 Potential Effects including Mitigation Measures

Construction

8.7.1 Physical impacts can result in the partial or complete removal of an asset during construction of a road and any associated activities. All such impacts would occur during construction, and would be long-term in nature. Such impacts can include partial or total removal of heritage assets and compaction of archaeological deposits by construction traffic and structures.

8.7.2 During the options assessment, the following potential direct impacts on heritage assets were identified:

- The western end of the Scheme may have a direct physical impact on remains of the Ribchester to Poulton le Fylde Roman road (MLA26077) (an un-designated heritage asset), although the actual nature of any remains is currently unknown
- The Scheme would have a direct physical impact on Singleton Park (an un-designated heritage asset) (MLA34414)
- The Scheme may also have a direct physical impact on currently unknown archaeological remains within the footprint

8.7.3 During the options assessment, no significant indirect effects were predicted on the setting of statutory heritage receptors. There are no Grade I listed buildings within 5km of the proposed scheme and 3 Grade II* listed buildings are all located over 1km away. There are 14 Grade II listed buildings within 1km of the scheme. The largest effect noted was a slight adverse effect to the Grade II listed Ice House at Singleton Hall located approximately 100m from the Scheme. Effects were slight due to existing screening by vegetation and trees between the receptor and the Scheme.

8.7.4 Using professional judgement effects on historic landscape were considered to be slight adverse during the options assessment due to the medium value of the historic landscape and minor adverse effect as a result of the proposed Scheme.

Operation

8.7.5 Operation impacts are those that arise from the use of the road once built. Operation of the Scheme has the potential to result in direct/indirect impacts on heritage assets and their setting. In many cases, these would be long-term in nature, commence during construction of the Scheme and continue during operation. Such impacts can include changes to the surroundings of heritage assets or the general character of their setting and changes to access or the viability of heritage assets. There would be no additional operation impacts to those recorded during construction. Effects on Singleton Park however may be reduced over time though replacement and additional tree planting.

Mitigation Potential

8.7.6 Mitigation measures would be developed as part of the design process and informed by the on-site evaluation. Due to the nature of heritage assets it may not be possible to avoid or mitigate all impacts however, mitigation measures may include:

- Amendment of designs to reduce impacts, where reasonably practicable
- Recording of archaeological features
- Screening of construction or operation activities

8.7.7 Potential mitigation measures may also include intrusive and non-intrusive investigations. These could include, but not be restricted to, geophysics surveys, trial trenching, archaeological evaluation etc

8.8 Proposed Level and Scope of Assessment

8.8.1 A simple assessment in accordance with HA/208/07 of the DMRB would be undertaken in the ES in the first instance and focus on effects on the un-designated assets: Ribchester to Poulton Roman road (and associated archaeological remains) and Singleton Park.

8.8.2 The ES would cover direct and indirect effects to un-designated heritage assets. Effects would be reported for construction and operation.

8.8.3 It is proposed that effects on the historic landscape are scoped out of the assessment as significant effects are unlikely based on work undertaken during the options phase. The options assessments identified a slight adverse effect on historic landscape character which is not significant.

8.8.4 Based on work carried out in the options phase it is not anticipated that there would be significant effects on designated heritage assets. The largest effect on statutory heritage assets identified was a slight adverse effect to the Grade II listed Ice House at Singleton Hall located approximately 100m from the Scheme. Effects were slight due to the existing screening by vegetation and trees between the asset and the Scheme which mean that the views of this asset are unaffected. Designated heritage assets would be included in the dataset in the DBA for completeness but impacts would not be reported on in the ES unless further assessment identifies that they have settings that extend to the Scheme.

8.9 Proposed Methodology Including Significance

Guidance

8.9.1 As part of the cultural heritage assessment a DBA would be produced; this would form the baseline of the ES. The impact assessment would follow the methodology set out in Volume 11, Section 3, Part 2 'Cultural Heritage' (HA 208/07) of the DMRB. This would be reported in the ES. The cultural heritage assessment would also be undertaken in accordance with the following best practice guidance and standards:

- Historic England (2008) Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment
- Historic England (2015) Historic Environment Good Practice Advice in Planning Note 2 'Managing Significance in Decision-Taking in the Historic Environment'
- Historic England (2015) Historic Environment Good Practice Advice in Planning Note 3 'The Setting of Heritage Assets'
- Drawing from: Historic England (2011) The Setting of Heritage Assets
- Chartered Institute for Archaeologists (2014) 'Code of Conduct' and 'Standard and guidance for Historic Environment Desk-Based Assessment'

Proposed Assessment Methodology

8.9.2 In the terminology used by HA 208/07 a detailed assessment for archaeological remains and un-designated assets comprising:

- DBA
- Site based evaluation

8.9.3 The DBA would use where possible data gathered during the options phase and present baseline conditions including:

- Obtaining updated data from the relevant Historic Environment Records (HERs)
- Inspection of aerial photographs held by the Historic England Archive, and LiDAR sources
- Inspection of additional sources held by the HERs within the respective local administration bodies (Wyre and Fylde), such as reports on previous investigations, and local and regional cultural heritage literature held in their further information files
- Inspection of sources held by the respective Centres for Archives (Wyre and Fylde), including historic Ordnance Survey and pre-Ordnance Survey mapping, and local and regional cultural heritage literature
- A walkover survey to determine the effects of the Scheme on archaeological remains
- Consultation with appropriate heritage advisors to identify the need for, nature scope and scale of site-based evaluation required in support of the application

8.9.4 Following the data collation and analysis phase, accessible portions of the study

area would be the subject of a walk-over survey undertaken in order to 'ground truth' heritage asset record data, identify previously unrecorded heritage assets and identify area where recent impacts may have compromised the survival of known and currently unknown heritage assets. The results of the walk-over survey would be incorporated into the DBA.

8.9.5 Following production of the DBA it may be necessary to undertake a site based evaluation to provide further information regarding the presence, nature and condition of known and currently unknown heritage assets. These works would be undertaken where the DBA has been unable to provide sufficient information to allow the significance of effect arising from impacts associated with the Scheme to be adequately predicted.

8.9.6 The results of the DBA and any subsequent field surveys would establish the impacts of the Scheme and assist with the identification and agreement of appropriate mitigation.

Assessment Periods/Scenarios

8.9.7 The assessment would cover the construction and operation phases.

Future Baseline

8.9.8 Due to the nature of the cultural heritage resource it is unlikely that the future baseline would change to any great degree, although Historic England would be consulted regarding any potential changes to the status of heritage assets (e.g. new listings/de-listings, new archaeological discoveries) and Local Planning Authorities would be consulted regarding the changes to the status of any conservation areas (e.g. changes to existing boundaries, new conservation areas etc).

Significance Criteria

8.9.9 Assessments of significance consider how far heritage asset(s) contribute to an understanding of the historic environment, through their individual or group qualities, either directly or potentially. These are professional judgements, but they would also be guided by legislation, national policies, acknowledged standards, designations, criteria and priorities. The assessment would follow the methodology as set out in HA 208/07 of the DMRB.

8.10 Assumptions and Limitations

8.10.1 The assessment would be compiled using heritage asset data obtained from third party sources and the prediction of effects would then be based on the accuracy of the data received.

8.10.2 Due to the nature of archaeological remains, their identification and assessment necessarily requires an element of assumption. In particular, the nature, extent, survival, and even the precise location, of buried archaeological remains are often uncertain, as the majority of such sites have never been subject to archaeological investigation to modern standards.

9 BIODIVERSITY

9.1 Introduction

9.1.1 This chapter details the proposed scope of work relating to the approach to the assessment of the Scheme and potential effects on biodiversity. The aims of this chapter are to:

- Define the study area
- Detail the requirements of the NN NPS for the assessment
- Present the consultations undertaken and proposed
- Explore the baseline information that has been collected and provide information on further baseline information to be collated through desk study or surveys
- Identify the value of environmental resources and key receptors
- Outline the potential significant effects that would occur and describe the potential mitigation measures
- Describe proposed level and scope of assessment
- Detail the methodology that would be used to assess effects on biodiversity
- Identify any assumptions and limitations

9.1.2 Government policy for the natural environment is contained within the Natural Environment White Paper (NEWP) (2014), which aims to reduce overall biodiversity loss, support healthy, well-functioning ecosystems and to establish coherent ecological networks.

9.1.3 Legislative provisions at both the international and national level that have potential to impact on planning decisions affecting biodiversity are set out in the Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System (ODPM 06/2005, Defra 01/2005). This circular complements the national planning policy in the National Planning Policy Framework (NPPF).

9.1.4 There are interrelationships between the biodiversity and other environmental topic comprising:

- Chapter 7: Air Quality
- Chapter 11: Noise and Vibration
- Chapter 13: Road Drainage and the Water Environment

9.2 Study Area

9.2.1 The study area for biodiversity includes the Scheme footprint and extends to 1km for non-statutory designated sites and records relating to protected/notable species and habitats which may support protected/notable species.

9.2.2 The study area for statutory designated sites was developed in accordance with the DMRB published by the Highways Agency (2008). It extends to 2km from the Scheme for sites listed within the Natura 2000 network which is made up of Special Areas of Conservation (SACs), Sites of Community Importance (SCI) and candidate

SACs, SPAs and potential SPAs designated respectively under the Habitats Directive and Birds Directive. The network includes both terrestrial and marine sites (Marine Protected Areas (MPAs). These sites are known as 'Natura 2000 sites' or 'European Sites'. Although Ramsar sites are not technically Natura 2000 sites they are treated as European Sites as a matter of government policy and for the purposes of this document.

9.2.3 The study area is increased to 30km for SACs where bats are noted as a qualifying interest.

9.2.4 Field surveys, proposed and undertaken have been on the land situated within the Scheme footprint and all accessible land within a 1km route corridor surrounding the Scheme (i.e. 500m either side of the Scheme). Please refer to Figure 9.1 at Appendix A for defined study areas. In addition, study areas for targeted surveys are further defined within Appendix B.

9.3 NN NPS Requirements

9.3.1 The biodiversity and ecological conservation aspects of the NN NPS are presented from Paragraph 5.20 to Paragraph 5.38. In addition, the general assessment principles, which include the requirements for EIA and HRA, both of which are pertinent to biodiversity, are included in Section 4 - Assessment Principles, (Paragraph 4.15 to Paragraph 4.21 and Paragraph 4.22 to Paragraph 4.27 (respectively)). This also includes the consideration of alternatives, as required for both EIA and HRA.

9.3.2 The NN NPS provides information regarding what should be included in the applicant's assessment in Paragraph 5.22 and Paragraph 5.23, which state that:

> *"Where the project is subject to EIA the applicant should ensure that the environmental statement clearly sets out any likely significant effects on internationally, nationally and locally designated sites of ecological or geological conservation importance (including those outside England) on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity and that the statement considers the full range of potential impacts on ecosystems.*
>
> *The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests".*

9.3.3 In order to comply with the requirements of the NN NPS the following guidance would be used when undertaking the Ecological Impact Assessment:

- The DMRB Volume 11, Section 3, Part 4 (1993)
- IAN 130/10) (2010) Highways England's IAN which updates the DMRB criteria for the assessment of Ecology and Nature Conservation
- IAN 141/11 (2011) which provides updated guidance for the Assessment of Implications on European Sites and the Planning Act 2008
- The Chartered Institute for Ecology and Environmental Management (CIEEM) Guidelines for ecological impact assessment in the UK and Ireland, terrestrial, freshwater and coastal (EcIA) (2016)

9.4 Consultation Undertaken and Proposed

9.4.1 Table 9-1 presents details of consultations undertaken to date during the options appraisal and details consultation proposed to inform the ES.

Table 9-1: Details of consultations which have been undertaken and proposed

Consultations Undertaken	Date	Information Obtained
Natural England (Discretionary Advice Service agreement No. DAS2055)	March 2016 and August 2017	2016: Confirmation that ecological survey effort and associated methodology proposed to be undertaken to inform the ES are appropriate (currently seeking agreement of Great Crested Newt Survey effort). August 2017: Preliminary meeting regarding the HRA.
Fylde Bird Club	September 2015	Bird records dating back to 2005, extending to 500m either side of the route options due to volume of data
LARA: Lancashire Amphibian and Reptile Atlas project	January 2016	Records of amphibians and reptiles within 1 km of the Scheme. They also provided many records of negative Great Crested Newt results obtained from surveys of many ponds within the study area.
LERN; the Lancashire Environment Record Network.	September 2015	Records of protected and notable species dating back to 2005, sensitive bird areas and locations of non-statutory designated sites.
Environment Agency	January 2016	Records of fish and macroinvertebrates
Consultations Proposed	**Date**	**Information to be Obtained**
Natural England	2017 / 2018	Any additional information and to discuss the HRA.
Royal Society for the Protection of Birds	2017 / 2018	Any additional information.
Local Wildlife Trusts	2017 / 2018	Any additional information.
North Lancashire bat group	2017 / 2018	Any additional records of bats (not held by LERN) within 1km of the Scheme.

Consultations Undertaken	Date	Information Obtained
Lancashire badger group	2017 / 2018	Any additional records of badger (not held by LERN) within 250 m of the Scheme.

9.5 Baseline Information

Baseline Information Obtained/Surveys Undertaken

9.5.1 During the options phase, a desk study was undertaken for the study area which comprised:

- A review of the Multi-agency geographic information centre (MAGIC) - magic.defra.gov.uk to determine the location of international/national nature conservation designated sites, habitats registered on the Priority Habitat Inventory and registered European Protected Species Licence applications
- A review of Ordnance Survey mapping and online aerial imagery
- A review of local biodiversity action plans
- Obtaining records from LERN, LARA and Fylde Bird Club
- Reviewing previous ecological reports prepared

9.5.2 A phase 1 habitat survey was undertaken of the study area. Site visits were conducted in April, June, July and September 2016 during suitable weather conditions (i.e. clear and dry).

9.5.3 The survey comprised a walkover of the land and habitats present, with a classification of the habitats to Phase 1 Habitat Survey standard. The survey followed the 'Preliminary Ecological Appraisal' methodology as set out in the 'Guidelines for Preliminary Ecological Appraisal' (CIEEM, 2013), which is a development of the method described in the 'Handbook for Phase 1 Habitat Survey – a technique for environmental audit' (JNCC, 2010). The Extended Phase 1 Habitat Survey provides information on the habitats in the survey area and identifies actual or potential presence of legally protected or otherwise notable species/habitats. The main habitats within the survey area were mapped and are shown on Figure 9.3 at Appendix A.

9.5.4 In addition, targeted surveys were also undertaken for great created newts, reptiles, wintering birds, breeding birds, badgers, water voles, otter, bats (roost and activity survey) and phase 2 habitat surveys for woodlands and hedgerows. The scope and proposed methodologies to undertake the targeted ecological surveys was agreed with Natural England prior to any survey being undertaken (note agreement for the Great Crested Newt survey effort is still in discussion). The short report and Natural England's response can be found at Appendix B.

Statutory and Non-Statutory Designated Sites

9.5.5 Table 9-2 lists the statutory and non-statutory designated sites identified during the desk study, the distance and direction of the sites from the Scheme; the location of these sites in relation to the Scheme is also highlighted on Figures 9.1 and 9.2 at Appendix A.

Table 9-2: Statutory and Non-Statutory Designated Sites

Site Name	Reason for Designation	Distance and Direction from Scheme
Morecambe Bay and Duddon Estuary SPA (which includes marine components)	The Morecambe Bay and Duddon Estuary SPA is one of the largest estuarine systems in the UK and is fed by five main river channels (the Leven, Kent, Keer, Lune and Wyre) which drain through the intertidal flats of sand and mud, covering approximately 37404.6 Ha. It is designated for its populations of breeding, over-wintering and passage birds which are of European importance; assemblages of sea birds and waterfowl which are of international importance (JNCC, 2004). [NB: Morecombe Bay SPA has recently merged with Duddon Estuary SPA to form the Morecombe Bay and Duddon Estuary SPA. This information would be updated in due course]. The SPA is also recognised by BirdLife International as an Important Bird Area (IBA; BirdLife International, 2015).	340m N
Morecambe Bay Ramsar site	Migratory waterfowl with Ringed Plover *Charadrius hiaticula* in internationally important numbers; assemblages of over-wintering birds which are of international importance; populations of breeding, over-wintering and passage birds which are of international importance. The site supports the third largest population of wintering waterfowl in the UK (JNCC, 1996).	340m N
Wyre Estuary SSSI	Ornithological interest; intertidal habitats including saltmarsh (Natural England, 1995).	340m N
Wyre-Lune rMCZ	Important populations of Smelt *Osmerus eperlanus* and Eel *Anguilla anguilla* (Defra, 2012). The site is not yet designated and Defra have indicated that there is not currently enough evidence to support designation; as such the designation process is currently on hold (The Wildlife Trusts, 2016). The rMCZ is still considered in this assessment in accordance with Highways Agency (2010) as an area which meets selection criteria but which is not designated.	Adjacent N
Skippool Marsh and Thornton Bank BHS	The principal habitats on site comprise un-grazed saltmarsh and relict woodland. Of particular note are	Adjacent N

Site Name	Reason for Designation	Distance and Direction from Scheme
	Lax-Flowered Sea-Lavender *Limonium humile*, a nationally scarce plant, and a significant population of Wild Celery *Apium graveolens*, a species which is included on the Provisional Lancashire Red Data List of Vascular Plants. The site measures approximately 9.05 ha and partially overlaps with the Wyre-Lune rMCZ at Skippool Creek.	
Shard Bridge Field Ditch BHS	The site comprises a longitudinal hollow and ditch supporting saltmarsh vegetation which drains into the immediately adjacent River Wyre and Morecambe Bay SPA. It measures approximately 0.35 ha, is flooded by saline water during very high tides and is notable for the occurrence of Long-Stalked Orache *Atriplex longipes*, a nationally scarce plant.	900m N
River Wyre – Upper Tidal Section BHS	The site comprises a tidal 3 km length of the River Wyre with associated mudflats, saltmarsh and grassland, extending to the boundary of the Wyre Estuary SSSI. It contains a variety of saltmarsh species and landward transition species where conditions are less saline. Two species on the Provisional Lancashire Red Data List of Vascular Plants occur here – Sand Leek *Allium scorodoprasum* and Common Meadow-Rue *Thalictrum flavum*. The site measures approximately 87 ha with the majority of this area located within 1 km of the route options. The site partially overlaps with the Wyre-Lune rMCZ and is immediately adjacent to the Morecambe Bay SPA/SSSI.	530m N

Terrestrial Ecology

9.5.6 During the options phase, a desk study was undertaken to inform the options assessment and to inform the selection of a preferred Scheme. As part of these assessments, an initial HRA Screening Report was also produced, to assess the potential impacts of the options.

9.5.7 These reports would be used as a base to inform the ES baseline along with the targeted species surveys undertaken.

Other Baseline Information to be Obtained

9.5.8 To further inform the baseline within the ES a second suite of wintering bird surveys is proposed to commence in September 2017. In addition, reptile surveys and bat

activity surveys would also be completed in October 2017.

9.6 Value of Environmental Resources and Receptors

9.6.1 It is acknowledged that there has been an update to the CIEEM EIA Guidelines (2016). This states that the term 'key environmental receptors' has been replaced with 'Important Ecological Features'. The latter term is used hereinafter throughout this Chapter. Table 9-3 presents a list of important ecological features along with their associated value that were identified during the assessments and targeted surveys undertaken at the options stage.

Table 9-3: Value of Important Ecological Features

Ecological Feature	Value
Morecambe Bay and Duddon Estuary SPA	Very High Value
Morecambe Bay Ramsar site	Very High Value
Wyre Estuary SSSI	High Value
Wyre-Lune rMCZ	High Value
Skippool Marsh and Thornton Bank BHS	Medium Value
Shard Bridge Field Ditch BHS	Medium Value
River Wyre – Upper Tidal Section BHS	Medium Value
Deciduous woodland S41 Habitat	Up to Medium Value
Hedgerow S41 Habitat	Potentially up to Medium value
Coastal Saltmarsh & Mudflats S41 Habitat	Up to Very High Value
Coastal and Floodplain Grazing Marsh S41 Habitat	Up to Very High Value)
Ponds S41 Habitat	Up to Medium Value
River Wyre	Rivers S41 Habitat; Very High Value
Skippool Creek	Rivers S41 Habitat; High Value
Main Dyke	Rivers S41 Habitat; High Value
Other Rivers S41 Habitat	Unnamed tributaries off Main Dyke and small field drains/steams; up to Medium Value
Other (non-S41) habitats	Up to Low Value
Protected & Notable Plants (including Fungi)	Up to Low

Ecological Feature	Value
Invasive flora	No Value
Aquatic Invertebrates	Up to Medium Value
Terrestrial Invertebrates	Up to Medium Value
Fish	Up to Medium Value
Great Crested Newts	Up to Medium Value
Other amphibian species	Excluding Great Crested Newts up to Low Value
Reptiles	Up to Low Value
Wintering/passage birds	Up to Very High Value
Breeding birds	Up to Low Value
Bats	Up to Medium Value
Badger	Likely Negligible Value
Otter	Up to Medium Value
Water Vole	Up to Medium Value
Brown Hare	Up to Low Value
Hedgehog	Up to Low Value

9.7 Potential Effects including Mitigation Measure

Terrestrial Ecology

Construction

9.7.1 The construction of highways can affect application site-specific features (habitats or wild flora) and mobile features (populations of wildlife). Impacts can occur through several mechanisms, including:

- Indirect harm through construction disturbance, air quality, vibration, noise or hydrological effects
- Direct loss of functionally linked land associated with designated sites
- Direct loss of wildlife habitats through land-take
- Severance, by dividing habitats or wildlife corridors
- Direct mortality through construction activities
- Disruption of local watercourses and drainage patterns
- Indirect effects through construction disturbance, air quality, vibration, noise or hydrological effects

9.7.2 These effects are likely to be the most common and wide ranging associated with the Scheme.

9.7.3 Disturbance resulting from construction can affect sensitive species. This could lead

to abandonment of young, increased competition, predation risk, use of critical energy reserves, etc.

9.7.4 This category also includes disturbance by noise, light, vibration, air quality and hydrological effects outside designated sites.

9.7.5 Impacts can be wide ranging and are discussed within the other sections of this report. The CEMP would identify parts of the application site where pollution may occur, or features that are particularly sensitive.

Loss of functionally linked land associated with designated sites

9.7.6 The HRA Screening Report prepared during the options stage following a single year of bird surveys suggests, that there would be no direct effect on the Morecambe Bay and Duddon Estuary SPA or the Morecambe Bay Ramsar site, or on qualifying interests while they are using the European site.

9.7.7 However, further wintering bird / passage bird surveys and stakeholder engagement (including with Natural England) is required to be undertaken alongside the ES to inform the HRA. Areas identifying options for 'mitigation land' are also being identified in consultation with Natural England should the second year of bird surveys change the initial HRA Screening Report conclusions. This is a key consideration for the HRA process.

Direct loss of wildlife habitat through land-take

9.7.8 Inevitably loss of habitat leads to loss of resources, that may be critical at a single stage or several stages of a given species life cycle. The offline sections of the Scheme have greater land take of habitats utilised by great crested newts, bats and birds.

9.7.9 Where great crested newts and bats are affected for example through the loss aquatic and/or terrestrial habitats for great crested newts and loss of roost sites for bats, mitigation would be developed within a development licence issued by Natural England.

Severance, by dividing habitats or wildlife corridors

9.7.10 Given the predominantly arable landscape, and in the absence of mitigation, the severance (including temporary severance during construction) of existing wildlife corridors along the Scheme (such as watercourses, field margins, hedgerows and tree lines) could affect species associated with these habitats. Severance caused by construction of new highway is therefore expected to be a key consideration in the mitigation strategy.

9.7.11 Severance leads to isolation both within and between populations and from specific resources of for example great crested newts and bats separated spatially and temporally. The effects of this could include reduced foraging success, increased competition, genetic isolation and inbreeding.

9.7.12 Severance would begin during the application site clearance and the effects may continue during operation, as in the absence of mitigation the road may act as a barrier across the landscape to a range of species including great crested newts, bats, birds and terrestrial mammals.

Direct mortality through construction activities

9.7.13 Less mobile species, or animals that are young or hibernating, are likely to be those most vulnerable to direct mortality during construction. The effects of individual mortality erode the population, which can lead to local extinctions once the population falls beneath a critical threshold. These population level effects of direct mortality can take considerable time to become apparent. Often it is the longer-lived species, with greater parental investment and low annual recruitment, which struggle to recover from the loss of individuals resulting from construction activities.

9.7.14 A great crested newt development licence which would include a mitigation strategy would be developed and agreed with Natural England to ensure that the favourable conservation status of the population within their natural range is maintained through construction.

9.7.15 A CEMP would also be developed to protect other species.

Disruption of local water courses

9.7.16 Aquatic species are the most vulnerable to effects from pollution and increased silt levels. In addition, species such as bats can be affected by disruption to local watercourses as they often follow water courses when they forage. If relevant, a mitigation strategy would be developed and agreed with Natural England to avoid harm or damaging or blocking access to their habitats.

9.7.17 There are potential pollution pathways between the Scheme and the Morecambe Bay and Duddon Estuary SPA and Morecambe Bay Ramsar site along with possible functionally linked land, however, a CEMP would be developed for the Scheme which would include pollution prevention measures which would ensure no likely significant effects

Operation

9.7.18 Following the completion of construction, the Scheme has the potential to affect both application site-specific and mobile receptors in the following ways:

- Direct mortality through traffic collisions
- Polluted road runoff affecting the water environment
- Impacts on vegetation from polluted spray from road traffic
- Impacts on species through road lighting
- Barrier effect on movement of animals caused by the new road which broadly bisects the existing habitat on a north south axis (thereby restricting movement east west and vice versa)

9.7.19 Effects on species would be addressed during construction (secured by a development licence where appropriate) and it is not anticipated that any further impacts would arise during operation.

Mitigation Potential

9.7.20 Mitigation, compensation and enhancement measures are likely to be required in relation to relevant policies, the legal protection afforded to certain species and to ensure that invasive species are not spread as a result of the Scheme.

9.7.21 Species- and habitat-specific mitigation and the requirement for pre-construction surveys and/or monitoring would develop as the Scheme progresses and following further survey. In the event that there is a likelihood of adverse effects on protected species, the Scheme would only proceed under a licence granted by Natural England. Where certain ecological receptors have been identified or where there is potential for them, and impacts cannot be avoided during construction, Reasonable Avoidance Measures (RAMs) and/or Precautionary Working Methods (PWMs) may also be developed and implemented under supervision by an Ecological Clerk of Works (ECoW).

9.7.22 Construction impacts can be designed out/minimised as far as possible through, for example, minimising land-take/habitat loss and locating access tracks/haul roads and site compound/material storage areas outside of ecologically sensitive sites/habitats (such as statutory and non-statutory designated sites and S41 habitat). Clearly demarcated, dedicated access routes would be provided during construction and, where possible, any areas required for temporary works would be reinstated on completion.

9.7.23 Impacts during construction would be controlled through strict adherence to a CEMP that would be developed using best practice techniques but also a suite of bespoke control measures, such as:

- All site works would be carried out in accordance with best environmental working practices e.g. CIRIA publications
- Spill kits would be available on site and potential polluting materials would not be stored within 50m of watercourses or areas of significant biodiversity value
- Methods to minimise/prevent contamination of watercourses during the construction works would be implemented in order to prevent damage and/or pollution to aquatic habitats
- Any works that disturb drainage features would include for any necessary mitigation or reinstatement to ensure the features retain their correct working function
- The Scheme, and specific construction tasks, would aim to retain of as many trees as possible. Where tree surgery to the crown or roots is necessary, this would be undertaken in accordance with British Standard (BS) 3998:2010 Tree Work Recommendations and appropriate Arboricultural Association advice notes. Retained trees would be adequately protected from construction, with particular attention when adjacent to ancient woodland, in accordance with BS 5837:2005 Trees in Relation to Construction Recommendations, Arboricultural Association and Forestry Authority Advice Notes, and the National Joint Utilities Group (2004) Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees
- The avoidance of periods of particular sensitivity is considered best practice for a range protected and notable species. The presence of significant ecological receptors may have implications for the timing of construction activities
- All trenches and work excavations within sensitive areas would either be backfilled or covered overnight, fenced off to prevent animals falling in, or

battered with earth ramp(s) to allow animals a means of escape

- Short term airborne pollution resulting from site vehicle emissions and dust would be controlled through best practice measures such as wetting, if dictated by very dry weather conditions
- Appropriate measures would be taken to avoid the spread of invasive and non-native plants
- Pre-construction ecological checks/surveys would be carried out where required
- Post-construction planting would aim to enhance the ecological value of the Highways England soft estate in the vicinity of the Scheme. Where possible, this would include reinstating and re-linking severed linear wildlife corridors with new planting. Consideration would be given to the inclusion of locally sourced native plant species within planting proposals and the application of sensitive management and monitoring regimes

Enhancement Considerations

9.7.24 Consideration should be given to ensuring the soft estate is landscaped in such a way as to provide habitats of more ecological value than those that are lost and to enhance connectivity e.g. by altered management of retained habitat and/or planting treelines/hedgerows to provide safe commuting routes for wildlife. This could also include enhancement of areas required for temporary land-take during construction e.g. compound areas and access tracks and retro-fitting of culverts. Improved environmental outcomes, including a net gain in biodiversity is also a target of Highways England's Road Improvement Strategy (Department for Transport, 2014 and Highways England's Biodiversity Plan, which aims to halt the decline in the vitality of habitats and plant and animal populations on and around their network.

Monitoring Requirements

9.7.25 Natural England development licences for protected species (such as great crested newts and badger for example) require up to date survey information. Thus, repeat surveys of habitats directly affected by the Scheme may be required to inform any licence applications (if required). Further pre-construction surveys may also be required for highly mobile or highly invasive species known to be present within the study area.

9.7.26 Should Natural England development licence(s) be required, then post-development monitoring may be a condition of the licence (i.e. to inform the success of mitigation/compensation and identify management and remedial operations). The survey effort would be agreed with Natural England as part of the licence application

9.8 Proposed Level and Scope of Assessment

9.8.1 The CIEEM Guidelines require the assessment to 'scope out' receptors at an early phase to allow the assessment to concentrate on those ecological receptors that are considered to be 'key' (i.e. those ecological resources that are considered could experience significant effects – that is, those that could adversely affect the integrity of the habitat or the favourable conservation status of a species' local population) and which are identified as being of sufficient value to be material to decision-making (District/Borough level or above).

9.8.2 The decision to scope out these items (and any others following the completion of the detailed desk study and survey work) would be reviewed following consultations, the receipt of the scoping opinion and as the Scheme design progresses.

9.8.3 The assessment reported in the ES would be a detailed assessment and cover both the construction and operation phases for the following receptors:

- Morecambe Bay and Duddon Estuary SPA
- Morecambe Bay Ramsar site
- Wyre Estuary SSSI
- Wyre-Lune rMCZ
- Skippool Marsh and Thornton Bank BHS
- Shard Bridge Field Ditch BHS
- River Wyre – Upper Tidal Section BHS
- Deciduous woodland S41 Habitat
- Hedgerow S41 Habitat
- Coastal Saltmarsh & Mudflats S41 Habitat
- Coastal and Floodplain Grazing Marsh S41 Habitat
- Ponds S41 Habitat
- Skippool Creek
- Main Dyke
- Other Rivers S41 Habitat
- Great Crested Newts
- Wintering/passage birds
- Bats
- Breeding birds
- Otter

9.8.4 Based on data generated to date, through desk studies and targeted surveys, it is considered likely that the following species are absent from the survey area and are therefore scoped out of further assessment:

- Reptiles

  Reason: No reptiles were recorded during the targeted surveys within the survey area.

- Water Vole

  Reason: No evidence of water vole was recorded during the targeted surveys within the survey area.

9.8.5 The additional features below, may be present within the study area; however, due to their local status and low value, or distance from the Scheme, significant effects

are very unlikely; these features are therefore scoped out of further assessment:

- River Wyre – S41 Habitat

  Reason: Potential negative effects are largely restricted to pollution via contamination of watercourses which flow into the River Wyre. Potential pollution effects would be sufficiently mitigated by water management processes as detailed in Chapter 13: Road Drainage and the Water Environment.

- Other (non-S41) Habitats

  Reason: No notable or protected Other (non-S41) Habitats were recorded within the survey area. Potential significant effects on Other (non-S41) Habitats which are not notable or protected are highly unlikely to occur.

- Aquatic Invertebrates

  Reason: White-Clawed Crayfish were not identified within the study area and the species is thought to be locally absent. No records of other aquatic invertebrates were identified during the desk study and the habitats within the study area are likely to be of value only to common, widespread species.

- Terrestrial Invertebrates

  Reason: Suitable habitats for terrestrial invertebrates within the Scheme footprint were of limited extent and likely to support an invertebrate assemblage typical of the region and of Low value.

- Badger

  Reason: No setts were identified within close proximity to the Scheme; limited evidence of foraging activity was recorded and habitats within the survey area were typically of Low value. It is therefore unlikely that Badger populations of greater than Low value are present locally.

- Brown Hare

  Reason: The Brown Hare population within the survey area is considered likely to be of Low value due to their widespread distribution. Additionally, habitats within the footprint of the Scheme were largely sub-optimal; more suitable habitats, in which Brown Hare are more likely to be concentrated, were however present within the wider survey area; impacts to which are considered unlikely.

- Hedgehog

  Reason: The Hedgehog population within the survey area is considered likely to be of Low value due to their widespread distribution. Habitats within the survey area were broadly suitable for this species, the Scheme will therefore result in the loss of a nominal proportion of the available habitat.

- Fish

  Reason: No records of fish were identified during the desk study. Waterbodies within the survey area are likely to support common and widespread species only.

- Other Amphibian Species (i.e. not Great Crested Newts)

  Reason: Although present within the survey area, the assemblage of Other Amphibian Species recorded are considered to be of Low value. A small number of waterbodies, representing a nominal proportion of the waterbodies in the wider landscape, will be lost as a result of the Scheme. Mitigation and compensation measures proposed for Great Crested Newts will sufficiently mitigate any potential impacts to Other Amphibian Species.

- Invasive Flora

  Reason: A restricted diversity and distribution of Invasive Flora were identified during habitat and protected species surveys. Responsibilities relating to Invasive Flora will be managed through standard mitigation procedures during construction, operation and decommissioning of the Scheme.

- Protected and Notable Plants (including Fungi)

  Reason: Records of BAP species identified during the desk study were low in number and situated well outside of the footprint of the Scheme. The study area was assessed as being of Negligible to Low value for Protected and Notable Plants (including Fungi).

9.8.6 Note: agreement is currently being sought from Natural England regarding the elements proposed to be scoped out of further assessment.

9.9 Proposed Methodology Including Significance

Guidance

9.9.1 Refer to Section 9.3.

9.9.2 Features that are considered to be of local importance for biodiversity or greater, which could be affected by the Scheme would be identified as Important Ecological Features. Effects on features of lower than local importance (i.e. application site importance) would not be assessed within the EIA.

Proposed Assessment Methodology

Study Area for the EIA

9.9.3 Refer to Section 9.2.

Assessment Periods/Scenarios

Construction

9.9.4 The construction period is likely to be a two-year programme and would comprise the main period when the most significant impacts on terrestrial and marine ecology are most likely to occur. Construction impacts would be identified during the pre-construction assessment and, where required, ecological mitigation measures would be put in place prior to construction commencing. Ongoing monitoring would be carried out throughout the construction footprint to make sure than no new ecological constraints arise during this time, for example newly excavated badger setts.

Operation

9.9.5 Post construction monitoring is also likely to be required, however this is dependent on the Important Ecological Features present and the mitigation and/or compensation that would be required for the Scheme. Details of the post-construction monitoring requirements would therefore be confirmed during the EIA, but are likely to be tied to licensing requirements for protected species and the proposed mitigation strategies and compensation and enhancement measures for the Scheme that would be agreed with statutory consultees.

Future Baseline

9.9.6 To account for changes in the future baseline, it is common that a future 'do nothing' scenario (also referred to as the 'Do Minimum scenario') be considered for the ES. This would provide a forecast of what the future baseline conditions would be accounting for all factors, but without the particular development under consideration. To enable direct comparison between this and the 'post development' impact predictions made during the EIA, this future scenario would often be set at the opening year of the proposed development. For the Scheme, this would comprise the opening year 2022.

9.9.7 The majority of the Scheme crosses land currently used for agriculture and private gardens. In the absence of the Scheme, it is anticipated that the management of the land would remain unchanged.

9.9.8 Acoustic changes from the existing road network have the potential to affect species supported by habitats throughout the survey area for the Scheme, particularly in more open rural environments. For a future baseline, information provided by traffic modelling and extrapolated acoustic predictions for year of opening (2022) would need to be assessed to see if impacts from traffic would be significant.

Significance Criteria

9.9.9 For the purpose of the EIA the potential for significant effects of the Scheme on the identified Important Ecological Features would be assessed using the CIEEM guidelines, (CIEEM 2016) and IAN 130/10.

9.9.10 The CIEEM Guidelines define a significant effect as 'an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general'.

9.9.11 Where a significant effect is identified, the importance of the ecological feature is used to help determine the geographical scale at which the effect is significant.

9.9.12 If significant adverse effects are considered likely, the assessment would present mitigation measures that may be required to avoid or minimise a significant adverse effect. The detail of such mitigation would be informed by additional survey data and in agreement with statutory consultees. If after implementation of mitigation measures, a residual effect is anticipated, potential compensation measures may be required. The approach to determining the importance of ecological features and the significance of effects described above is in accordance with the CIEEM Guidelines. Table 9-4 provides a comparison of the approach for ecology in accordance with IAN 130/10 when defining significance of impacts on Important Ecological Features.

Table 9-4: CIEEM guidelines significance, compared to IAN 130/10 (Highways England 2010)

Significance Following CIEEM Guidance	IAN 130/10 (HE 2010) Significance category
Significant at the international level	Very large
Significant at the national level	
Significant at the regional level	Large
Significant at the county level	Moderate
Significant at the local level	Slight
Not significant	Neutral

9.10 Assumptions and Limitations

9.10.1 The assessment would rely on the results of ecological surveys. Ecological surveys are limited by a variety of factors which affect the presence of flora and fauna (e.g. climatic variation, season and species behaviour). A lack of evidence of a protected species during a survey does not mean that the species is absent; hence the surveys would also record and assesses the ability of habitats to support such species. The time frame in which surveys are undertaken provide a snapshot of activity within the survey area and do not necessarily detect all evidence of use by a species. Surveys would, however, be undertaken during appropriate survey windows and at times which do not present any issues when classifying habitats.

10 LANDSCAPE

10.1 Introduction

10.1.1 This chapter details the proposed scope of work for the assessment of the Scheme's potential effects on the landscape, townscape and visual amenity. The aims of this chapter are to:

- Define the study area
- Detail the requirements of the NN NPS for the assessment
- Present the consultations undertaken and proposed
- Explore the baseline information that has been collected and provide information on further baseline information to be collated through desk study or surveys
- Identify the value of environmental resources and key receptors
- Outline the potential significant effects that would occur and describe the potential mitigation measures
- Describe proposed level and scope of assessment
- Detail the methodology that would be used to assess effects on landscape
- Identify any assumptions and limitations

10.1.2 The landscape and townscape resource are considered to be entities in their own right. These are areas and places which have evolved over time and their inherent features give them their distinctive character. Visual amenity is a linked but separate resource which considers the views experienced by people within the landscape and townscape resource.

10.1.3 The importance and value of the landscape and townscape resource is considered at the international, national, regional and local level and is embodied in the overarching European Landscape Convention as *"an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors."*

10.1.4 There may be interrelationships related to the potential effects on landscape and other disciplines comprising:

- Chapter 8: Cultural Heritage
- Chapter 9: Biodiversity
- Chapter 11: Noise and Vibration

10.2 Study Area

10.2.1 The study area consists of a 1km corridor either side of the Scheme. The study area for the assessment of on landscape and townscape has been defined by a combination of desk studies, a site survey, professional judgement and consideration of the extent of the Zone of Theoretical Visibility (ZTV).

10.2.2 The extent of the study areas can be seen in Figure 10.1 at Appendix A.

10.3 NN NPS Requirements

10.3.1 The need to consider the likely significant effects on the landscape and townscape resource, and visual amenity is identified in Paragraph 5.144 of the NN NPS. This paragraph also makes reference to the following:

- Guidelines for Landscape and Visual Impact Assessment, 3rd Edition, April 2013
- Natural England profiles for National Character Areas
- Reference to any landscape character assessment and associated studies
- Relevant local development plans and policies

10.3.2 Paragraph 5.144 the DMRB Volume 11, Section 3, Part 1 and associated IAN 135/10 are the guidance documents used when assessing the impacts of road schemes. Following this guidance allows the assessment to comply with the requirements of the NN NPS. It also allows the determination of whether the scheme impacts are considered significant on the landscape and townscape resource and on visual amenity. The details of the assessment methodology are provided in Section 10.9.

10.3.3 The NN NPS provides information regarding what should be included in the applicant's assessment in Paragraphs 5.145 to 5.146. These paragraphs state that:

10.3.4 The assessment should consider:

- Significant effects during construction and operation on landscape components and landscape character (including historic landscape characterisation)
- Visibility and conspicuousness of the scheme during construction and operation and potential impacts on views and visual amenity
- Any noise, light pollution effects (i.e. at night), including on local amenity, tranquillity and nature conservation

10.4 Consultation Undertaken and Proposed

10.4.1 To date no consultation has been undertaken in relation to the study area or the selection of representative viewpoints used within the options assessments. Table 10-1 presents consultations proposed to inform the ES.

Table 10-1: Details of proposed consultations

Consultations Proposed	Date	Information to be Obtained
Wyre Borough Council	Oct 2017	Collection of data including Tree Preservation Orders (TPO). To agree representative viewpoint locations.
Fylde Borough Council	Oct 2017	Collection of TPO data. To agree representative viewpoint locations and associated montages.

10.5 Baseline Information

Baseline Information Obtained/Surveys Undertaken

10.5.1 During the options phase, a desk study was undertaken for the study area which comprised:

- A review of National Character Areas (NCAs) - https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making
- Review of Lancashire County Council – A Landscape Strategy for Lancashire, 2000
- Review of local planning policy in Fylde and Wyre
- Obtaining details of listed buildings and Conservation Areas from Wyre Borough Council and Fylde Borough Councils websites
- Details of PRoW and Open Access land - http://mario.lancashire.gov.uk/agsmario/

10.5.2 ZTV mapping was also prepared at the options phase and verified with a site survey to select appropriate viewpoints. Eight viewpoints were selected, however, they were not discussed or agreed with the local planning authorities.

10.5.3 Baseline collated though the options phase notes that the Scheme is wholly located within NCA 32: Lancashire and Amounderness Plain and within this area the Fylde coast is considered to be a distinct area together with significant urban areas such as Blackpool and Fleetwood.

10.5.4 Lancashire County Council's adopted Supplementary Planning Guidance (SPG) for landscape and heritage, provides a good practice guide for developments in rural and urban environments and describes the 21 landscape character types within Lancashire and sets out a strategy and recommendations for each.

10.5.5 With reference to the SPG the landscape resource within the study area is mostly located within Character Type 15 - Coastal Plain (Figure 7.4), a gently undulating or flat lowland farmland separated by ditches to the west and low clipped hedges elsewhere. The landscape resource within this character type is further broken down into individual character areas. The part of the study area within this type falls within Character Area 15d - The Fylde. This character area covers the gently undulating farmland of the Fylde which occurs between Blackpool to the west and Preston and the M6 corridor to the east. It is naturally poorly drained, and field ponds are a particularly characteristic feature and provide important wildlife habitats.

10.5.6 The northern edge of the study area is located within Character Type 18: Open Coastal Marsh. This is described as comprising salt marshes and intertidal flats and is further broken down into individual character areas with Character Area 18c – Wyre Marshes falling in the study area. This character area covers the Wyre Estuary, extending upstream from the coast at Fleetwood in the north to an area north east of Little Singleton. The hinterland of the estuary within the study area is relatively rural in comparison to the more industrialised west bank to the north near Fleetwood.

10.5.7 The townscape resource within the study area is located within the Urban

Landscape Type: Suburban.

10.5.8 There are also are nine listed buildings within the Scheme's study area and two Conservation Areas within the vicinity. The locations of these assets are presented on Figure 8.1 at Appendix A. The study area also extends into the Wyre Borough Council Green Belt (SP3) to the west. Three TPOs have been identified within the part of the study area which falls under the jurisdiction of Fylde Borough Council.

10.5.9 Publicly accessible areas including the Wyre Estuary Country Park have been identified within the study area as shown on Figures 10.1 at Appendix A.

10.5.10 Eight representative viewpoints were selected to inform the options assessment. Photographs from these viewpoints are presented on Figure 10.3 at Appendix A.

10.5.11 During the options phase, the landscape baseline was used to further divide local landscape and townscape into eight scheme level character areas: These were:

- LCA 1: Wyre Estuary Open Farmed Hinterland. The open coastal farmland east of the A585 line corridor between west of the Wyre Estuary and north of the A585 between Skippool in the north and Pool Foot Lane in the east
- LCA 2: Main Dyke Farmland. The low-lying river valley farmland west of the A585 between the area south of Skippool in the north running to the east of Poulton Le Fylde to the A586 / and Poulton Industrial Estate in the south
- LCA 3: Singleton Enclosed Farmland. The gently undulating enclosed farmland within the south part of the study area between the A585 and the village of Singleton
- LCA 4: Singleton Hall and Parkland. The intimate designed landscape in the south part of the study area immediately east of the B5260
- TCA 1: Little Poulton. The suburban townscape located to the west of Main Dyke
- TCA 2: Skippool. The suburban and trunk road townscape located at the junction of the existing A585 and A588
- TCA 3: A585 Mains Lane. The trunk road townscape of the ribbon development along the A585 between Skippool and Little Singleton
- TCA 4: Little Singleton. The trunk road townscape which is located at the busy junction of the existing A585 and A586

Other Baseline Information to be Obtained

10.5.12 Consultation with Fylde Borough Council and Wyre Borough Council would be undertaken to discuss and agree representative viewpoints to be assessed in the ES.

10.5.13 Landscape, townscape and visual surveys and baseline photography would be undertaken during winter and summer to verify the desk based data, to identify the extent and conditions of existing landscape features, character and tranquillity, and the Zone of Visual Influence, visual receptors which may be affected by it and the identification and photography of representative viewpoints and photomontages which would inform part of the assessment visualisations.

10.6 Value of Environmental Resources and Receptors

10.6.1 The key landscape and townscape resources and viewpoints along with their value identified during the options assessments is presented in Table 10-2 and indicated on Figures 10.1 and 10.2 at Appendix A. The preliminary assessment summary is based on a three-point scale of High, Moderate and Low according to IAN 135/10.

Table 10-2: Value of Landscape and Townscape Character

Resource	Sensitivity
LCA 1: Wyre Estuary Open Farmed Hinterland. The open coastal farmland east of the A585 line corridor between west of the Wyre Estuary and north of the A585 between Skippool in the north and Pool Foot Lane in the east.	High
LCA 2: Main Dyke Farmland. The low-lying river valley farmland west of the A585 between the area south of Skippool in the north running to the east of Poulton Le Fylde to the A586 / and Poulton Industrial Estate in the south.	Moderate
LCA 3: Singleton Enclosed Farmland. The gently undulating enclosed farmland within the south part of the study area between the A585 and the village of Singleton.	Moderate
LCA 4: Singleton Hall and Parkland. The intimate designed landscape in the south part of the study area immediately east of the B5260.	High
TCA 1: Little Poulton. The suburban townscape located to the west of Main Dyke.	Moderate
TCA 2: Skippool. The suburban and trunk road townscape located at the junction of the existing A585 and A588.	Low
TCA 3: A585 Mains Lane. The trunk road townscape of the ribbon development along the A585 between Skippool and Little Singleton.	Moderate
TCA 4: Little Singleton. The trunk road townscape which is located at the busy junction of the existing A585 and A586.	Low
VP1a: B5260 Lodge Lane: View looking west to Main Dyke and Poulton Industrial Estate.	High – residential and users / visitors to Singleton Park Low – Users on the B5260
VP1b: B5260 Lodge Lane: View looking east to Singleton Park.	High – residential and users / visitors to Singleton Park Low – Users on the B5260
VP2: Garstang Road East: looking east from PRoW.	High – users of the PRoW Low – users of the A586

Resource	Sensitivity
VP3: Little Poulton Lane: looking north and east from PRoW and residential properties.	High – residential properties and users on PRoW
VP4: A585 Mains Lane looking east.	High – residential Low – Users on the A585
VP5: A585 Mains Lane looking east near to the junction with A588 Shard Road.	High – residential Low - A585
VP6: A585 Mains Lane looking west and north towards Skippool Bridge.	High – adjacent residential properties Low – users of the A585 Mains Lane
VP7: Breck Road looking north and east across existing junction.	High – residential properties on Breck Road Low – Users of the A585 Mains Lane
VP8: Wyre Way West, PRoW looking south and west towards Skippool Bridge.	High – Users or the Wyre Way PRoW

10.7 Potential Effects including Mitigation Measures

Construction Phase

10.7.1 There is potential for adverse effects during the Scheme construction, as a result of the installation and operation of construction compounds, night time working, batching plant and storage areas, haul routes, land re-profiling, installation of new structures, temporary lighting, traffic management, and construction noise, in relation to landscape character due to the moderate / high sensitivity of the land. In addition, there is the potential for adverse effects on high sensitivity visual amenity receptors including residential properties, users of the local PRoW network, users of the local road network and users of Singleton Park. These effects would vary between temporary, short and medium term (i.e. during the period of the construction works only).

Operation Phase

10.7.2 There is potential for short to long term and permanent adverse effects during the Scheme operation as a result of land take, the installation of the carriageway, including location of any elevated parts of the works, vegetation clearance, lighting, signage and the installation of new gantries. These are in relation to landscape character, including the high / moderate sensitivity and high sensitivity visual amenity receptors including residential properties, users of the local PRoW network, users of the local road network and users of Singleton Park. Some of these effects would be suitably minimised by the application of standard and appropriate mitigation measures (see paragraphs 10.7.4 and 10.7.5).

Potential Mitigation Measures

Construction Phase

10.7.3 A number of standard mitigation measures would be implemented to help screen or minimise the visual intrusion of construction activities on nearby visual receptors and would be included in the CEMP. These could include:

- Appropriate siting of compound buildings and construction access routes, tall structures i.e. batching plants, and working and storage areas away from residential properties and to avoid and protect areas of mature vegetation which would help to screen the work
- The creation of grassed earth storage mounds and appropriate hoarding (perimeter security fencing)
- Introduce a night time lighting strategy to avoid light pollution such as glare and light spill in relation to night time working areas compounds
- Reinstatement of construction areas outside the operation areas of the Scheme to agricultural use and/or for nature conservation interest

Operation Phase

10.7.4 A number of mitigation measures would be implemented to help integrate the Scheme with the landscape and townscape resource and to screen or minimise the visual intrusion in views from visual receptors. A number of these measures would also form part of the mitigation for other ES chapters such as biodiversity, cultural heritage and noise and vibration would be based on DMRB Volume 10, Good Roads Guide. These measures would be incorporated into the Environmental Masterplan and could include:

- New tree and shrub planting (native and ornamental species) appropriate to the area and to achieve their environmental objective
- Creation of false cuttings i.e. the creation of artificial earthworks to help screen the Scheme, typically between 2m and 4m high
- Re-grading engineered earthworks to smooth flowing contours and / or shallow slopes so that they can be returned to agriculture and thereby reducing the overall footprint of the Scheme and aid integration / visual screening
- Maximise the use of cuttings deeper than 4m to help screen traffic, particularly high side vehicles

10.8 Proposed Level and Scope of Assessment

10.8.1 At this stage as significant effects cannot be ruled out, both the construction and operation impacts of the Scheme on landscape and townscape resources along with visual amenity would be considered as part of a detailed assessment reported in the ES in accordance with the DMRB. No aspect would be scoped out of the assessment.

10.9 Proposed Methodology Including Significance

Guidance

10.9.1 Potential effects would be assessed in accordance with the guidance outlined in the

DMRB Volume 11, associated IANs and other relevant guidance. Relevant guidance documents are listed below:

- Highways Agency (2008) HA 205/08: DMRB Volume 11, Section 2, Part 5: Assessment and Management of Environmental Effects
- IAN 135/10 sets out the requirements for Highways England and the Service Providers for the assessment and reporting of the effects of highways projects on landscape character and on views from sensitive visual receptors. It has been prepared in accordance with the principles set out in DMRB Volume 11 Section 2 providing a methodology for considering the significance of identified effects
- Institute of Environmental Management and Assessment and the Landscape Institute (2013) Guidelines for Landscape and Visual Impact Assessment Third edition
- Landscape Institute (2011) Advice Note 01/11 'Photography and Photomontage in Landscape and Visual Impact Assessment'

10.9.2 The guidance requires a number of different types of assessments to be undertaken including:

- Construction assessment on the landscape, townscape resource and on visual amenity receptors (assuming construction activities during peak period and night time construction activities and associated lighting)
- Operation assessment on the landscape, townscape resource and on visual amenity receptors, at Year of Opening (Winter) and Design year 15 (Summer) when landscape planting mitigation would be reasonably effective
- Operation assessment on the night time landscape resource and views using the Institution of Lighting Professionals guidelines which identify Environmental Zones that define the broad night-time characteristics of areas in terms of relative brightness or darkness

Construction Phase

10.9.3 IAN 135/10 identifies the following landscape, townscape and visual amenity construction impacts to be examined:

- Details contained in the scheme design that could cause temporary or permanent direct impacts, such as the location of any demolition and other construction activity and vegetation clearance
- Works such as site compounds, borrow pits, access routes and numbers of heavy construction vehicles etc

Operation Phase

10.9.4 IAN 135/10 identifies the following landscape, townscape and visual amenity operation impacts to be examined:

- Details contained in the scheme design that could cause temporary or permanent direct impacts such as the nature and extent of proposed land take, the location of any elevated parts of the works, vegetation clearance, drainage, lighting, signage and the treatment of kerbs, paving and other finishes

- The height, scale, form (and lighting) of any gantries and road signs, together with other operation elements associated with the Scheme such as service areas, laybys, treatment lagoons, noise barriers etc
- The impact of traffic, including the proportion or frequency of high sided vehicles, and of vehicle headlights at night
- Lighting, both as a permanent visual feature during the day and as a potentially intrusive element at night
- Aspects of the scheme that have the potential for indirect impacts, such as changes to the economic viability of the area and consequential impacts such as hedgerow removal and field amalgamation

Proposed Assessment Methodology

Study Area for the EIA

10.9.5 Refer to Section 10.2.

Assessment Periods/Scenarios

Construction Phase

10.9.6 It is anticipated the construction period would be two-year duration. IAN 135/10 requires the assessment to take account of the following:

- Assume a maximum visibility or maximum perceived change situation (i.e. when construction activity is at its peak for any given view), and noting how long that period would be likely to last

Operation Phase

10.9.7 IAN 135/10 requires the assessment to be undertaken for both day and night time situations using the following scenarios.

- In the winter of the year of opening (Year 2022) (to represent a maximum effect situation, before any planted mitigation can take effect), taking account of the completed Scheme and the traffic using it
- In the summer of the fifteenth year after project opening (Design Year 2037), (to represent a least effect scenario, where any planted mitigation measures can be expected to be reasonably effective), taking account of the completed Scheme and the traffic using it

Future Baseline

10.9.8 The future baseline (i.e. the Do Minimum scenario) would take account of potential changes in the day and night time landscape and townscape resource and visual amenity through a review of new planning applications and other proposed developments within the study area. In terms of the impact of traffic this would utilise the traffic data provided by the traffic team for the opening year (2022) and in design year 2037.

Significance Criteria

10.9.9 The guidance in IAN135/10 or any subsequent update of this document would be used to determine whether the Scheme impacts are considered significant.

10.9.10 For effects on the landscape and townscape resource, the assessment of their significance is determined by considering the magnitude of impact arising from the Scheme on each of the features and elements that make up the character of the resource, bearing in mind the value of the landscape (and/or of specific features and elements), and the ability of the landscape to accommodate change of the type proposed (i.e. its sensitivity).

10.9.11 For effects on visual amenity, the assessment of their significance is determined by considering the sensitivity of the visual receptor to the magnitude of impact on visual amenity arising from the Scheme.

10.9.12 The magnitude of impact on the landscape and townscape resource and visual amenity is the degree of change that would arise if the Scheme were to be completed (i.e. 'Do-Something'), as compared with a 'Do-Minimum' situation. Factors to consider are the scale of the impact, the nature of the impact, whether it is an adverse or beneficial change, and the timescale involved (i.e. temporary, short, medium or long term / permanent).

10.9.13 Indicative criteria guidance in IAN 135/10 for the landscape and townscape resource and for visual amenity are provided. Table 1, Landscape and Townscape Resource - Magnitude and Nature of Impact and Typical Descriptors (Annex 1) and Table 2, Visual Amenity - Magnitude and Nature of Impact and Typical Descriptors (Annex 2) in the document are used respectively. IAN 135/10 makes it clear that they are not prescriptive and in making judgements the landscape professional needs to be able to demonstrate to others a consistent and justifiable argument.

10.9.14 Landscape sensitivity would depend on the character of the receiving landscape, the nature of the proposed Scheme and the type of change. Visual sensitivity is categorised by the sensitivity of the visual receptor, and would include people in their homes, users of PRoW and other areas of open space or recreational landscapes, people at work and people travelling along roads or railway lines. Indicative sensitivity criteria guidance for the landscape and townscape resource and for visual amenity set out in IAN 135/10 are provided in Table 2, Landscape and Townscape Resource – Sensitivity and Typical Descriptor and Examples (Annex 1) and Table 1 Visual Amenity – Sensitivity and Typical Descriptors (Annex 2) in the IAN 135/10 document. As with the determination of magnitude of impact, these are not prescriptive and in making judgements the landscape professional needs to be able to demonstrate to others a consistent and justifiable argument.

10.9.15 In terms of the significance of the effect IAN 135/10 indicates:

- A major magnitude of change on a highly sensitive receptor would produce an effect of high significance
- A minor magnitude of change on a less sensitive receptor would produce an effect of low or negligible significance
- Major changes for less sensitive receptors and minor changes for more sensitive receptors could also produce significant levels of effect

10.9.16 IAN 135/10 notes:

"*that it is not possible to set out a precise formula for the determination of the significance of effect as every case is different, and it is therefore important that*

the significance level determined is supported by reasoned justification in the form of a written explanation (supported by photographs and other illustrations as appropriate), so that the basis for the assessment is clear. This is particularly important where a choice of categories is given in the matrix (e.g. where a highly sensitive receptor experiences a moderate magnitude of impact, justification for the assessment of either a moderate or large degree of significance should be given)".

10.10 Assumptions and Limitations

10.10.1 No specific assumptions or limitations have been identified at this stage.

11 NOISE AND VIBRATION

11.1 Introduction

11.1.1 This chapter details the proposed scope of work for the assessment of the Scheme's potential effects on noise and vibration. The aims of this chapter are to:

- Define the study area;
- Detail the requirements of the NN NPS for the assessment
- Present the consultations undertaken and proposed
- Explore the baseline information that has been collected and provide information on further baseline information to be collated through desk study or surveys
- Identify the value of environmental resources and key receptors
- Outline the potential significant effects that would occur and describe the potential mitigation measures
- Describe proposed level and scope of assessment
- Detail the methodology that would be used to assess effects on noise and vibration
- Identify any assumptions and limitations

11.1.2 Note that the key issues of construction and operation noise would be considered and assessed individually, the relevant methodologies are set out below.

11.1.3 There may be interrelationships between the noise and vibration assessment and other environmental topics comprising:

- Chapter 9: Biodiversity
- Chapter 10: Landscape
- Chapter 12: People and Communities

11.2 Study Area

Construction Noise and Vibration Study Area

11.2.1 The study area for the construction noise assessment would comprise an area up to 300m from the Scheme boundary. This is determined in accordance with relevant guidance and using professional judgement. At distances over 300m noise predictions have to be treated with caution because of the increasing importance of meteorological effects. The predicted noise levels when undertaken in accordance with British Standard 5228:2009+A1:2014 'Code of Practice for Noise and Vibration Control on Construction and Open Sites' Parts 1 (BS5228) may be incorrect at distance greater than 300m.

11.2.2 Specific sensitive receptors would be identified in association with the local authorities within this study area for the consideration of construction noise impacts.

11.2.3 The study area for the construction vehicle assessment would consider road traffic noise changes within 300m of any road/route identified as experiencing an increase in noise of greater than 1dB as a result of the Scheme during the construction

phase.

Operation Road Traffic Noise and Vibration Study Area

11.2.4 The operation road traffic noise study area has been derived in accordance with the requirements of DMRB Volume 11 Section 3 Part 7 HD213/11 'Noise and Vibration' Detailed Assessment Methodology (HD213/11).

11.2.5 Outside of the detailed DMRB defined study area consideration of noise changes along major traffic routes within the A585 Saturn Model would be undertaken using the Calculation of Road Traffic Noise (CRTN) defined Basic Noise Level (BNL) values.

11.2.6 Defra defined Noise Important Areas (NIAs) within the DMRB defined study area would specifically be assessed.

11.2.7 Vibration effects would be assessed in line with DMRB.

11.3 NN NPS Requirements

11.3.1 The relevant noise guidance contained within the NN NPS is in paragraphs 5.186 to 5.200. Specifically, paragraph 5.188 sets out factors that would likely determine noise impacts from a Scheme, including:

- Construction noise and the inherent operation noise from the proposed development and its characteristics
- The proximity of the proposed development to noise sensitive premises (including residential properties, schools and hospitals) and noise sensitive areas (including certain parks and open spaces)
- The proximity of the proposed development to designated sites where noise may have an adverse impact on the special features of interest, protected species or other wildlife

11.3.2 Paragraph 5.189 of the NN NPS quantifies what is required to be considered within any noise assessment of a Scheme that is subject to EIA and has the potential for significant noise impacts to occur. These considerations should form part of any noise study and ES:

- *"a description of the noise sources including likely usage in terms of number of movements, fleet mix and diurnal pattern;*
- *identification of noise sensitive premises and noise sensitive areas that may be affected;*
- *the characteristics of the existing noise environment;*
- *a prediction on how the noise environment would change with the proposed development;*
- *in the shorter term such as during the construction period;*
- *in the longer term during the operating life of the infrastructure;*
- *at particular times of the day, evening and night as appropriate;*
- *an assessment of the effect of predicted changes in the noise environment on any noise sensitive premises and noise sensitive areas;*

- *measures to be employed in mitigating the effects of noise. Applicants should consider using best available techniques to reduce noise impacts; and*
- *the nature and extent of the noise assessment should be proportionate to the likely noise impact."*

11.3.3 Paragraph 5.190 specifies in addition to the considerations outlined above that:

"*The potential noise impact elsewhere that is directly associated with the development, such as changes in road and rail traffic movements elsewhere on the national networks, should be considered as appropriate."*

11.3.4 Section 5.195 sets out the main aims of the NN NPS with regard to Government Policy on sustainable development, and details that the SoS should not grant development consent unless satisfied that the proposals would meet, the following aims:

- Avoid significant adverse impacts on health and quality of life from noise as a result of the new development
- Mitigate and minimise other adverse impacts on health and quality of life from noise from the new development
- Contribute to improvements to health and quality of life through the effective management and control of noise, where possible

11.3.5 The NN NPS also considers mitigation stating that it could be necessary during both construction and operation phases, but should be "proportionate and reasonable" (Paragraph 5.198).

11.4 Consultation Undertaken and Proposed

11.4.1 To date no consultation has been undertaken. Table 11-1 presents consultations proposed to inform the ES.

Table 11-1: Details of proposed consultations

Consultations Proposed	Information to be Obtained
Wyre Borough Council	To agree noise monitoring locations and durations.
Fylde Borough Council	To agree noise monitoring locations and durations.

11.5 Baseline Information

Baseline Information Obtained/Surveys Undertaken

11.5.1 No recent noise surveys have been identified within the area of the Scheme that could be used within the scope of the EIA.

11.5.2 A desktop review of the study area indicates that the dominant source of noise in the area would predominantly be from road infrastructure sources.

11.5.3 Defra has produced Noise Action Plans which address the management of noise issues and effects from major roads in England under the terms of the Environmental Noise (England) Regulations 2006. The Action Plans are intended

to apply in particular to the most 'important areas' identified by the strategic noise maps. Therefore, a set of NIAs has been identified for each of the Noise Action Plans. The NIAs, with regards to roads, are defined as "an area where the 1% of the population that are affected by the highest noise levels are located". The location of NIAs of relevance to this assessment are shown on Figure 11.1 at Appendix A.

11.5.4 During the options phase, simple noise modelling was undertaken using the available traffic data. This determined that the Scheme would cause a change in traffic flows and predicted the Scheme would result in noise changes greater than the 1dB and 3db thresholds at receptors within 1km.

Other Baseline Information to be Obtained

11.5.5 Baseline surveys would to be undertaken at sensitive receptors in the vicinity of the Scheme, which have the potential to be affected by the Scheme during either the construction or operation phases. Construction and operation receptors may be different as a result of the way in which different elements of the Scheme need to be assessed.

11.5.6 Monitoring locations used in the study would require to be representative of the following land uses (as defined within the DMRB HD213/11, Annex 1 para A1.13) where they occur within the study area, but would need to be agreed with Wyre Borough Council and Fylde Borough Council during the consultation as defined within Section 11.4. However, examples of the types of land uses requiring consideration for baseline surveys would include the following, concentrating on where there are likely to be the largest impacts:

- Residential dwellings
- Hospitals
- Schools
- Community facilities
- Designated areas
- Scheduled Monuments
- Ramsar sites, SACs, SPAs and SSSIs
- PRoW

11.5.7 Monitoring would be undertaken as agreed with Wyre Borough Council and Fylde Borough Council in order to quantify a representative baseline noise climate of the study area including consideration of diurnal variations, and covering both the daytime and overnight periods during the weekday and weekend for use in the construction and operation noise assessments.

11.6 Value of Environmental Resources and Receptors

11.6.1 Sensitive receptors in terms of noise would be defined within the scope of the noise assessment supporting the EIA in accordance with the DMRB. These would include the receptors identified in Section 11.5.

11.6.2 As outlined in Section 11.5 Defra has identified a number of NIAs including eight along the A585 between Skippool and Little Singleton and on the B5142 Breck

Road. NIAs are presented on Figure 11.1 at Appendix A.

11.6.3 The next round of noise mapping is due to be undertaken under the Environmental Noise Directive (END) in 2017 and as such there is the potential that new NIAs may be identified requiring consideration in the assessment.

11.6.4 In terms of noise, a methodology has not yet been developed to assign the value of a receptor, currently this is defined based upon professional judgement and the guidance notes of the Noise Policy Statement for England (NPSE).

11.6.5 Therefore, based upon professional judgement the value of a receptor would be defined using the criteria provided in Table 11-2. A higher level of sensitivity has been assigned to receptors above Significant Observed Adverse Effect Level (SOAEL) in the future assessment year to align the level of significance with the NPSE.

Table 11-2: Determining the Importance / Sensitivity of Resource

Importance/Sensitivity of Receptor	Criteria
Very High	Residential dwelling where the long-term noise level is greater than SOAEL with or without the Scheme.
High	Residential dwelling where the long-term noise level is less than SOAEL. Hospitals Schools Community facilities Designated areas (e.g. Areas of Outstanding Natural Beauty (AONB), National Park, SAC, SPA, SSSI, Scheduled Monument) Places of Worship PRoW
Medium	Offices Bars/cafes/restaurants where external noise may be intrusive
Low	Factories and working environments with existing high noise levels Night clubs

11.6.6 SOAEL is a concept defined within NPSE, along with No Observed Effect Level (NOEL) and Lowest Observed Adverse Effect Level (LOAEL), which are based upon toxicology and define effects of noise upon health and quality of life.

11.6.7 Specifically, with regard to the definition of SOAEL the NPSE states that “It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our

understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."

11.6.8 As such within the scope of the definition of receptor value the daytime road traffic (operation) noise levels of SOAEL have been based upon the guidance provided in the Defra commissioned report 'Possible Options for the Identification of SOAEL and LOAEL in Support of the NPSE' as presented in Table 11-3.

Table 11-3: Levels of LOAEL and SOAEL Assumed for Operation Road Traffic Noise

Time Period	Adverse effect level	L_{Aeq} noise level (dB)	L_{A10} noise level (dB)
Day	LOAEL	56	60*
Day	SOAEL	66	68**
Night	LOAEL	46	n/a
Night	SOAEL	56	n/a
*4dB correction to LA10 based on L_{Aeq} to L_{A10} of +2dB from BS 8233:2014 *Guidance on sound insulation and noise reduction for buildings* and façade correction of +2.5dB rounded down ** Aligned with Noise Insulation Regulations			

11.6.9 For construction noise, the approach used on other large infrastructure project assessments such as the Silvertown Tunnel Project has been considered. The construction noise SOAEL for residential properties is defined within Table 11-4.

Table 11-4: Levels of LOAEL and SOAEL Assumed for Construction Noise

Time Period	LOAEL $L_{Aeq,T}$ (dB)	SOAEL $L_{Aeq,T}$ (dB)
Daytime 07:00 – 19:00 Monday to Friday. 07:00 – 13:00 Saturday.	60	75
Evening and Weekends 19:00 – 23:00 Monday to Friday. 13:00 – 23:00 Saturday. 07:00 – 23:00 Sunday.	55	65
Night 23:00 – 07:00 Monday to Sunday.	45	55

11.6.10 These definitions of SOAEL as defined within Tables 11-3 and 11-4 have been used within the definition of receptor value as defined within Table 11-2.

11.7 Potential Effects including Mitigation Measures

Construction

11.7.1 There is potential for adverse noise and vibration effects during the Scheme construction phase. It is anticipated that construction noise effects could occur due to the following:

- Noise from the operation of construction plant
- Noise from HGV movements to and from the site

11.7.2 It is anticipated that construction vibration effects could occur due to the following construction activities:

- Percussive piling activities
- Vibratory piling activities

11.7.3 Rotary bored piling operations are considered to have inherently low vibration levels, even at close proximity and it is not anticipated that any significant effects from this type of piling activity would occur.

11.7.4 The time of day that construction activities occur would also be considered to have the potential to create a significant noise and vibration effect.

Operation

11.7.5 The Scheme has the potential to affect existing ambient noise, during operation in the following ways:

- Increase in road traffic noise level at sensitive receptors within close proximity to the Scheme alignment
- Noise could be affected (positively or negatively) by changes in vehicle flow, speed and composition on the existing road network as a result of the Scheme

Mitigation Potential

11.7.6 Specific mitigation measures would be considered and recommended where required and practicable based upon the findings of the noise assessment.

11.7.7 However, where necessary the following generic noise mitigation measures would be considered within the scope of the noise study to control noise impacts in accordance with the requirements of the NN NPS aims.

Mitigation - Construction

11.7.8 Measures to minimise noise and vibration impacts from the construction phase would involve adopting Best Practicable Means (BPM) (as outlined in Section 72 of the Control of Pollution Act 1974) and the recommendations of good practice presented in BS 5228-1:2009+A1:2014.

11.7.9 These methods would be implemented through a CEMP and secured within the DCO.

Mitigation - Operation

11.7.10 The following measures would be considered where appropriate within the operation noise assessment with regard to road traffic noise:

- Thin wearing course/low-noise surfacing: the application of this type of surface can reduce noise levels by up to 3.5dB(A) where the average speed of the traffic is above 75kph. Below this speed there is a reduced benefit from these surface systems due to increased prominence of vehicle engine noise contributing to the overall noise level. This measure would be incorporated into the design
- The use of noise barriers can reduce the noise level at dwellings by reducing sound propagation. To be most effective, barriers are required to be either very close to the source (the road) or the receptor (the dwellings). The effectiveness of noise barriers as a mitigation measure would depend on site specific circumstances. Where a noise barrier is located close to the road, the effect on noise propagation is usually effective to about 300m. It may not always be possible to locate barriers close to the road as they can have adverse effects on pedestrian environment and also on visibility splay for drivers and cyclists in junction situations. Barriers would be included within the Scheme design where necessary
- A reduction in the average speed of vehicles can result in a reduction in traffic noise

11.8 Proposed Level and Scope of Assessment

11.8.1 The noise and vibration assessment would be a detailed assessment and cover both the construction and operation phases in accordance with Figure A1.1 of the HD/213/11 of the DMRB.

11.9 Proposed Methodology Including Significance

Study Areas for the EIA

11.9.1 Refer to Section 11.2.

Construction Noise and Vibration Assessment

11.9.2 Construction noise and vibration would be assessed using the guidance set out in British Standard BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Noise' (BS5228-1) and also BS 5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Vibration' (BS5228-2).

11.9.3 Part 1 of BS 5228-1 provides guidance on predicting and measuring construction noise and assessing its impact on the environment.

11.9.4 Part 2 of BS 5228-2 provides recommendations for basic methods of vibration control and methods of assessing its effects on the environment relating to construction where work activities/operations generate significant vibration levels.

11.9.5 Specifically, regarding the assessment and consideration of construction phase activities the following assessment methodologies would be used:

- Noise: In line with precedents set on other NSIP applications, the BS5228: 2009 +A1: 2014 ABC method would be used within the scope of the Scheme assessment in order to establish construction noise limits for the purposes of environmental impact assessment
- Vibration: BS5228-2 Annex B provides guidance on human response to vibration

in buildings in terms of peak particle velocity (PPV). This would be used as the methodology for the assessment and consideration of construction generated ground borne vibration

Operation Road Traffic Noise Assessment

11.9.6 Road traffic noise calculations would be undertaken in accordance with the methodology contained within the Department of the Environment and the Welsh Office CRTN: 1988 as required under the appropriate parts of the DMRB HD213/11 and NN NPS (Paragraph 5.191). The prediction of road traffic noise effects would be undertaken using a proprietary and appropriately validated 3-dimensional noise mapping software package such as IMMI or SoundPLAN 7.5

11.9.7 As a result of the size and nature of the Scheme it is anticipated that a DMRB detailed assessment would be necessary for the Scheme. In accordance with this level of assessment, as defined within the DMRB, the following comparisons would be made for road traffic noise levels to consider the impacts of the Scheme in both the short and longer terms:

- Do-Minimum scenario in the baseline year against Do-Minimum scenario in the future assessment year (long term)
- Do-Minimum scenario in the baseline year against Do-Something scenario in the baseline year (short term)
- Do-Minimum scenario in the baseline year against Do-Something scenario in the future assessment year (long term)

11.9.8 For night-time noise impacts, in accordance with DMRB only comparisons in the long term would be considered for receptors predicted to exceed an L_{night}, outside of 55 dB(A) or greater. The calculation of permanent traffic noise nuisance impacts would be undertaken for the following comparisons:

- Do-Minimum scenario in the baseline year against Do-Minimum scenario in the future assessment year (long term)
- Do-Minimum scenario in the baseline year against Do-Something scenario in the future assessment year (long term)

11.9.9 All predictions and comparisons would be presented in the reporting tables as specified in DMRB HD213/11 and assessed accordingly. Compliance with the NN NPS and NPSE would also be reported.

11.10 Assumptions and Limitations

11.10.1 Noise modelling undertaken to inform the ES would be based on the A585 traffic model and its assumptions.

11.10.2 Extensive research on a wide range of buildings of various ages and types has been carried out (Watts G.R, 1990), with no evidence found to support the theory that traffic induced vibrations are a source of significant damage to buildings.

11.10.3 DMRB HD 213/11states “significant ground-borne vibrations may be generated by irregularities in the road surface. Such vibrations are unlikely to be important when considering disturbance from new roads and an assessment would only be necessary in exceptional circumstances”.

11.10.4 Given the advice of DMRB HD213/11 that ground borne vibration should only be assessed in exceptional circumstances, the fact that the proposal is for a new road Scheme and that there are no suitable methods of prediction, no impacts from ground borne road traffic vibration would be assessed in the noise and vibration chapter.

12 PEOPLE AND COMMUNITIES

12.1 Introduction

12.1.1 This chapter details the proposed scope of work relating to the approach to the assessment of the Scheme and potential effects on people and communities. The aims of this chapter are to:

- Define the study area
- Detail the requirements of the NN NPS for the assessment
- Present the consultations undertaken and proposed
- Explore the baseline information that has been collected and provide information on further baseline information to be collated through desk study or surveys
- Identify the value of environmental resources and key receptors
- Outline the potential significant effects that would occur and describe the potential mitigation measures
- Describe proposed level and scope of assessment
- Detail the methodology that would be used to assess effects on people and communities
- Detail any assumptions and limitations

12.1.2 The people and communities chapter considers the potential effects of construction and operation of the Scheme on:

- Land Use – effects on private property and associated land-take, land used by the community, development land and agricultural land (in accordance with DMRB Volume 11, Section 3, Part 6);
- Journey Length, Patterns and Amenity – changes to journey length, local travel patterns, journey amenity affecting pedestrians, cyclists and equestrians (in accordance with DMRB Volume 11, Section 3, Part 8);
- New Severance and Relief from Existing Severance; where changes to pedestrian journeys and traffic flows may affect severance from community facilities (in accordance with DMRB Volume 11, Section 3, Part 8); and
- Vehicle Travellers – changes in the view from the road and driver stress (in accordance with DMRB Volume 11, Section 3, Part 9).

12.1.3 There are linkages between the assessment of potential effects on People and Communities and other disciplines, notably:

- Chapter 7: Air Quality
- Chapter 10: Landscape
- Chapter 11: Noise and Vibration
- Chapter 14 Geology and Contaminated Land

12.1.4 The term ‘community’ has been interpreted to include facilities that provide services and resources for the local population (such as education, healthcare, places of

worship, leisure facilities, community centres and areas of public open space).

12.2 Study Area

Land Use

12.2.1 The study area for direct impacts on private property, community facilities, development land and agricultural land would be restricted to the footprint of the Scheme, associated works and locations where access arrangements (for example to private properties or community facilities) may be affected. When assessing potential impacts on agricultural businesses the study will take account of the full extent of affected businesses where required.

Journey Length, Patterns and Amenity

12.2.2 For the assessment of journey length, patterns and amenity, a 500m corridor either side of the Scheme would be used to identify PRoW that could be affected.

Community Severance

12.2.3 For the assessment of new severance from community facilities and relief from existing severance, the study area would include PRoW affected by the Scheme (new severance only).

Vehicle Travellers - View from the Road

12.2.4 The study area for this assessment would include the general extent of views from new sections of carriageway. The characterisation of general views from the road would be undertaken.

Vehicle Travellers – Driver Stress

12.2.5 Guidance does not define a study area for driver stress. The assessment would consider existing driver stress on the:

- A585, between Windy Harbour Junction and the junction with Fleetwood Road South
- A586 Garstang Road East at its junction with the A585 to its junction with Hardhorn Road, Poulton-le-Fylde
- The A588 Shard Road from the A585 to Hambleton
- Lodge Lane between the A585 to Singleton
- B5260 Lodge Lane between the A585 at Little Singleton to Singleton
- A588 Breck Road between the A585 at Skippool to Poulton-Le Fylde

12.3 NN NPS Requirements

12.3.1 The following sections of the NN NPS are relevant to the People and Communities topic.

Land Use

12.3.2 Paragraph 5.165 of the NN NPS states that an ES should identify existing and proposed land uses near the Scheme, including the effects of replacing an existing development or use, or the effects associated with precluding a new development or use proposed in the development plan.

12.3.3 In relation to open space and recreation, paragraph 5.166 of the NN NPS states that:

> *"existing open space, sports and recreational buildings and land should not be developed unless the land is surplus to requirements or the loss would be replaced by equivalent or better provision in terms of quantity and quality in a suitable location".*

12.3.4 With regards to agricultural land, paragraph 5.168 states that:

> *"Applicants should take into account the economic and other benefits of the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification). Where significant development of agricultural land is demonstrated to be necessary, applicants should seek to use areas of poorer quality land in preference to that of a higher quality."*

Journey Length, Pattern and Amenity, and Community Severance

12.3.5 The NN NPS identifies key considerations and requirements in relation to accessibility, severance and non-motorised users, requiring schemes to minimise adverse impacts.

12.3.6 The NN NPS expects applicants to improve access on and around the national networks by designing and delivering schemes that take account of the accessibility requirements of everyone who uses, or are affected by the network. It advises all reasonable opportunities to deliver improvements in accessibility on and to the existing network should also be taken. Applicants are advised to seek to deliver improvements that reduce community severance and improve accessibility.

12.3.7 The NN NPS recognises the importance of PRoW, National Trails and other rights of access to land for walkers, cyclists and equestrians. Where severance occurs, mitigation measures are required to address adverse effects. Where possible access should be improved. The character, use and attractiveness of the area need to be taken into consideration.

12.3.8 The NN NPS identifies there is a direct role for the national road network to play in helping pedestrians and cyclists. It states "the Government expects applicants to use reasonable endeavours to address the needs of cyclists and pedestrians in the design of new schemes", particularly in relation to accessibility, safety and severance.

12.3.9 As part of this, evidence is required to show that projects have used reasonable endeavours to address any existing severance issues that act as a barrier to non-motorised users. It also requires applicants to identify opportunities to invest in infrastructure where the national road network severs communities and acts as a barrier to cycling and walking "by correcting historic problems, retrofitting the latest solutions and ensuring that it is easy and safe for cyclists to use junctions."

12.3.10 The NN NPS sets out the duty of applicants to promote equality and comply with any obligations under the Equalities Act 2010.

12.3.11 The NN NPS also sets out requirements in relation to the impacts of projects on health, in particular if they affect access to key public services, local transport, opportunities for cycling and walking or the use of open space for recreation and physical activity.

12.3.12 Projects are required to identify and set out the assessment of any likely significant adverse health impacts.

Vehicle Travellers

12.3.13 The NN NPS acknowledges that traffic congestion can impact negatively on quality of life by leading to a marked deterioration in the experience of road users. Congestion can cause frustration and stress to those with time-pressured journeys.

12.3.14 There are no specific assessment requirements outlined for vehicle travellers in the NN NPS.

12.4 Consultation Undertaken and Proposed

12.4.1 No consultations have been undertaken to date regarding the people and communities assessment. To inform the ES specific organisations and interest groups would be engaged such as Wyre Borough Council, Fylde Borough Council and the Ramblers Association.

12.5 Baseline Information

Baseline Information Obtained/Surveys Undertaken

12.5.1 This section sets out baseline information obtained during the options phase in relation to each of the sub-topic areas.

Land Use

12.5.2 One residential property would be required to be demolished as part of the Scheme. The property 'West Wynds' on Old Mains Lane opposite Skippool Service Station is owned by Lancashire County Council. The Beeches is also located within the red line boundary, however, would not be demolished as part of the Scheme. The Scheme does not pass through any designated open space or a registered parks and gardens.

12.5.3 The Scheme would not directly affect any land use planning designations, however, there is a proposed residential development with consent on the outskirts of Poulton-le-Fylde. The site, comprises some 31 hectares and is located to the north of the Poulton Industrial Estate on the northern side of Garstang Road East (A586). The planning application is for 516 dwellings, landscaping and associated infrastructure and two new access points off Garstang Road East and new footpaths. The proposed development is located approximately 100m to Scheme – refer to Figure 12.1 at Appendix A.

12.5.4 There is no existing detailed Agricultural Land Classification survey data available for the Scheme, however, land immediately to the south has been surveyed (as Grades 3a and 3b). Provisional mapping also suggests there may be Grade 2 land within the eastern part of the Scheme.

12.5.5 Agricultural land is graded according to the degree to which its physical characteristics impose long-term limitations on agricultural use. The limitations may affect the range of crops which can be grown, the level of yield, the consistency of yield and production costs. Ability to grow a wide range of crops (including grass), whether actual or potential, is given considerable weight but does not outweigh the ability to produce consistently high yields of a somewhat narrower range of crops. The grading of agricultural land is on the basis of physical quality alone and the

main physical factors taken into account are climate, relief and soil. Therefore, Grade 2 land is deemed very good agricultural land (best and most versatile), which can support a wide range of agricultural land and horticultural crops.

12.5.6 Agricultural businesses and other land holdings that could potentially be affected by land-take have been identified through Land Registry information. Accordingly, agricultural businesses that may be affected by land-take by the Scheme includes:

- Manor House Farm, Mains Lane
- Ryecroft Farm, Mains Lane
- Singleton Grange Farm, Grange Road, Singleton

Journey Length, Patterns and Amenity

12.5.7 There are several PRoW which are located adjacent to, intersect with sections of the Scheme. The PRoW considered within the assessment have been identified from Lancashire County Councils definitive mapping. All PRoWs are detailed below:

- FP 1 - which runs along Main Dyke down to Little Poulton Lane
- FP 2 – which traverses the Scheme between Pool Foot Lane and Grange Farm
- FP 6 – which runs between Skippool on the A585 to Little Singleton along the Wyre Estuary
- FP 8 - which runs from Skippool along Main Dyke and meets FP2

12.5.8 The Scheme may also affect the Wyre Way Recreational Route at the junction with Mains Lane and the Amounderness Way.

Community Severance

12.5.9 Community facilities (education, healthcare and recreation) located within 500m of the Scheme (representing approximately a ten-minute walking distance) are identified on Figure 12.1 at Appendix A. Facilities include the Breck Primary School on the outskirts of Poulton-le-Fylde which is located approximately 200m from the Scheme.

Vehicle Travellers - View from the Road

12.5.10 The local landscape can be characterised as LCA 1: Wyre Estuary Open Farmed Hinterland, LCA 2: Main Dyke Farmland, LCA 3: Singleton Enclosed Farmland. and LCA 4: Singleton Hall and Parkland. Further detail regarding local character can be found Sections 10.5 and 10.6.

Vehicle Travellers – Driver Stress

12.5.11 A quantitative analysis using preliminary traffic data was undertaken at the options phase and included a review of the impacts on stress, in terms of frustration, fear of accidents, and route uncertainty. This would be developed for the Scheme in the ES.

Other Baseline Information to be Obtained

12.5.12 Other sources of data to be explored as part of the People and Communities assessment would include:

- Primary data in relation to PRoW usage (if available)

- NMU traffic counts
- Results from the traffic model on peak traffic flow and speed

12.5.13 ALC surveys would also be undertaken to determine the characteristics of the soils present and the land grades (with soil surveys being undertaken across non-agricultural where the soils are important in the land use supported). The ALC surveys would follow published guidelines (MAFF, 1988).

12.6 Value of Environmental Resources and Receptors

12.6.1 The value or sensitivity of resources affected by the Scheme has been categorised based on the perceived type and value of the asset or facility using guidance from DMRB Volume 11, Section 3, Parts 6, 8 and 9 and professional judgement.

12.6.2 The value of each resource/ receptor would vary due to a number of factors including:

- The extent to which the resource/ receptor is duplicated in the locality, with alternative provision available on a comparative basis
- The extent of the catchment area that is served by the resource/ receptor and mode of access
- The proximity of the resource/ receptor to the scheme
- The extent to which the operation of the resource/ receptor would be impacted
- The extent to which the resource/ receptor is central to/ directly affects quality of life

Land Use and Journey Receptors

12.6.3 Table 12-1 provides a summary of the values / sensitivities assigned to the relevant groups of receptors within the study area.

Table 12-1: Value of Land Use, Community and Journey Receptors

Value	Description of Receptor
High	Residential or commercial buildings Buildings and land designated for use by the community e.g. schools, community halls, health facilities, playing fields Community land that attracts users nationally e.g. national parks Religious sites and cemeteries Land identified for residential development in local development plans Grade 1 agricultural land Irrigated agriculture Higher level agri-environment schemes Soils with a high susceptibility to structural damage and soil erosion throughout the year, including heavily textured, poorly structured soils Pastoral farms
Medium	Residential or commercial land e.g. gardens.

Value	Description of Receptor
	Land used by the community on a regional scale, e.g. country parks, forests and other land managed in such a way as to attract visitors from a regional catchment. Locally used community land, e.g. local parks and children's play areas National and Regional recreational routes Grades 2 and 3a agricultural land Entry level agri-environment schemes Soils with some seasonal susceptibility to structural damage and soil erosion Mixed farms
Low	Derelict or unoccupied buildings and land Locally used footpaths e.g. PRoW Grades 3b, 4 and 5 agricultural land Arable and grassland areas (including organic farms) Soils with medium to coarse textures less susceptible to structural damage and soil erosion

Vehicle Travellers

12.6.4 For the assessment of driver stress and traveller views there is no methodology for assigning a value to resources and receptors.

12.7 Potential Effects including Mitigation Measures

12.7.1 Possible significant effects on receptors are described for both construction and operation phases.

Land Use - Construction Phase

12.7.2 One private property would be required to be demolished during construction – West Wynds – Refer to Figure 12.1 at Appendix A.

12.7.3 No development land is located within the Scheme footprint.

12.7.4 The Scheme would lead to a direct permanent and temporary loss of agricultural land. Potential effects relating to agricultural land would include land-take from farmers, severance of access, as well as potential effects on crops and livestock as a result of noise and/or air pollution. The Scheme would be developed to minimise permanent and temporary land-take where possible. The right to compensation and methods and / procedures for assessing appropriate levels of such, would be identified in relation to the National Compensation Code. Where necessary, continued consultation would be necessary with landowners, occupiers and agents, as the Scheme developers manage and reduce impact on day-to-day activities as far as practicably possible.

Journey Length, Patterns and Amenity, and Community Severance – Construction Phase

12.7.5 PRoW – FP 2 which intersects the Scheme is likely to be temporarily affected by the construction of the Scheme, however is likely to be temporarily diverted.

12.7.6 In order to minimise disruption to NMU routes and PRoW, temporary diversions would be put in place together with appropriate signage. Information in advance and during the closures would help to reduce any inconvenience caused to users of the PRoW. This would be carried out in consultation with the local highways authority and Lancashire County Council.

Journey Length, Patterns and Amenity, and Community Severance – Operation Phase

12.7.7 PRoW - FP 2 would be permanently affected by the construction of the Scheme as it crosses the proposed bypass. Consideration would need to be taken when designing a foot bridge for accessibility of all members of the public including use of wheelchairs, and ensuring safety to vulnerable users, including for example, lighting at night. PRoW would need to be accessible to all NMU users including people with disabilities.

12.7.8 The impacts of traffic flows on existing severance have not been fully considered at this stage, but could pose a risk to accessing community facilities. Conversely there may be some relief from existing severance as a result of moving traffic from a congested area to a purpose-built route. The extent of this relief is to be determined.

12.7.9 there could be benefits associated with traffic flows being reduced through Little Singleton and Skippool. This would be considered in the ES.

12.7.10 Change in perceived severance and severance affecting access to community facilities would be considered further in the ES.

View from the Road

12.7.11 Where there is likely to be some limited reduction in quality of traveller's views during the operation phase, appropriate mitigation measures to the Scheme would be explored.

12.7.12 Travellers views could be improved through keeping road side barriers low. Where travellers views are restricted, innovative approaches to creating a positive environment through planting and lighting could be used.

Driver Stress

12.7.13 Travellers views could be improved through keeping road side barriers low and minimising the use of undercuttings where appropriate to do so. Where travellers views are restricted, innovative approaches to creating a positive environment through planting and lighting could be used. Driver stress could be minimised along the new route through ensuring minimised congestion, maximising safety and appropriate road signage, and by creating positive driver views.

12.8 Proposed Level and Scope of Assessment

12.8.1 The Scheme has the potential to result in significant effects on receptors in construction and operation. The phases and scenarios to be assessed are noted in Table 12-2.

Table 12-2: Magnitude of Impacts – Land Use

Assessment	Phases for Assessment	Scenarios for Assessment
Land Use	Construction	n/a
Changes to Journey Length and Pattern	Construction Operation	Opening Year with the Scheme
Changes to Journey Amenity	Operation	Opening Year with the Scheme
New Severance	Operation	Opening Year with the Scheme
Relief from Existing Severance	Operation	Opening Year (Do Minimum, Do Something)
View from the Road	Operation	Opening Year, Design Year
Driver Stress	Operation	Opening Year (Do Minimum, Do Something)

12.9 Proposed Methodology Including Significance

12.9.1 The people and communities assessments follow the approach set out in DMRB Volume 11 'Environmental Assessment', Section 3, Part 6 'Land Use' Chapter 1 – 11, Section 3 Part 8 'Pedestrians, Cyclists and Equestrians and Community Effects', and Section 3 Part 9 'Vehicle Travellers'.

Land Use

12.9.2 The methodology for the Land Use assessment comprises a number of stages:

- Identify the importance (value) of receptors identified
- Determine the magnitude of impact with consideration of any embedded measures and additional mitigation
- The significance of effect is then derived by comparing the value of receptors with the magnitude of effect

12.9.3 Unless otherwise specified, the definitions of magnitude of impact and significance of effect have been developed using professional judgement from those presented in the DMRB. Table 12-3 sets out how the magnitude of impacts would be assessed for the Land Use assessment.

Table 12-3 Magnitude of Impacts – Land Use

Score	Definition
Major Adverse	Loss of resource or severe damage to resource. For example: The demolition of buildings or significant loss of land (>50% of total footprint) Complete severance of access to private or commercial asset

Score	Definition
	Permanent loss or degradation of over 20ha of best and most versatile (BMV), or entire regional resource of BMV (ALC Grades 1, 2, 3a). Existing land-use would not be able to continue
Moderate Adverse	Where the extent of effects may be moderate. For example: Moderate loss of land (between 25% to 50% of total footprint) Major severance of access to private or commercial asset Permanent loss or degradation of 5-20ha of BMV, or large proportion of regional resource of BMV. Existing land-use would be able to continue but with major changes such as loss of yield, additional land management or increased use of fertilisers and herbicides.
Minor Adverse	Where the extent of effects are considered to be minor. For example: Minor loss of land (<25% of total footprint) Some partial or temporary severance of access to private or commercial asset Permanent loss or degradation of <5ha of BMV, or small proportion of regional resource of BMVL. Existing land-use would be able to continue but with some changes such as loss of yield, additional land management or increased use of fertilisers and herbicides.
Negligible Adverse	Very minor detrimental alteration to the characteristics of one or more receptor(s) Permanent loss or degradation of non-BMVL. Short-term impacts to receptors with no impact on integrity. No material change to existing land-use
No change	No observable impact in either direction, positive or negative
Negligible Beneficial	Very minor benefit, or positive addition to the characteristics of one or more receptor(s)
Minor Beneficial	Some measurable positive change for example in employment levels,
Moderate Beneficial	Where there may be moderate beneficial effects (for example improved access to local services and facilities)
Major Beneficial	Large scale or major improvement of resource; extensive enhancement (for example significant employment creation)

12.9.4 Table 12-4 sets out how assessments of significance would be made.

Table 12-4: Determination of the Significance of Impacts

Magnitude of Impact (Change)	Value/sensitivity of Receptor / Resource		
	High	Medium	Low
Major	Major	Major	Moderate
Moderate	Major	Moderate	Minor
Minor	Moderate	Minor	Minor
Negligible	Minor	Minor	Negligible

Journey Length, Patterns and Amenity

12.9.5 In order to identify changes to journey length and pattern, key community facilities would be mapped and their relative catchment areas established. Using NMU counts the following average journey speeds would be assumed:

- 5 km/hr for people on foot
- 10 km/hr for equestrians
- 20 km/hr for cyclists

12.9.6 The PRoW within the study area would be mapped, along with changes to these as a result of the Scheme and proposed mitigation measures. Road routes where traffic flows are anticipated to increase or reduce by greater than 30% in the opening year would also be highlighted.

12.9.7 Where a route to a community facility is severed, an alternative facility would be identified. The assessment would then provide a schedule of the lengths of journeys without the Scheme, with the Scheme and by using an alternative facility. An estimated of the number of people affected would be made for each case.

12.9.8 The assessment of changes to Journey Amenity would be approached qualitatively. Journey amenity is a factor of relative fear/safety (affected by traffic flows and distance from the road), noise, dirt and air quality, as well as the visual intrusion of the Scheme itself.

12.9.9 For each of the key journeys identified in the Journey Length and Pattern assessment, a description would be provided to give the overall impression of change in amenity and the estimated number of journeys affected.

Community Severance

12.9.10 Temporary and permanent severance caused by the Scheme would be assessed in line with DMRB in terms of the change in access to community facilities. This assessment would take some of the information from the land use assessment regarding community facilities, and the changes to journey length and pattern assessment.

12.9.11 The scale of severance criteria in Table 12-5 is based on DMRB Volume 11, Section 3, Part 8 (Highways Agency, 1993) and uses multi-dimensional criteria covering the change in length to journeys, the type of crossing, and impacts on accessing community facilities.

Table 12-5: Description of New Severance Impacts

Scale	Description	Examples
Slight	Current journey pattern likely to be maintained, with some disturbance to the route	Pedestrian at-grade[1] crossing of a new road carrying below 8,000 vehicles per day (AADT); A new bridge would need to be climbed or a subway traversed; Journey distance would increase by up to 250m.
Moderate	Some residents would be dissuaded from making trips, other trips made longer or less attractive	Two or more of the hindrances set out under slight applying to single trips; Pedestrian at-grade crossing of a new road carrying between 8,000 – 16,000 vehicles per day (AADT) in the opening year; Journeys would be increased by 250-500m.
Severe	People likely to be deterred from making their trip to the point that they make alternative arrangements of their habits, leading to a change in the location of centres of activity, or loss of a community. Would also include considerable hindrance to journeys	Pedestrian at-grade crossing of a new road carrying over 16,000 vehicles per day (AADT) in the opening year; An increase in length of journeys of over 500m; Three or more of the hindrances set out under slight severance or two or more set out under moderate severance.

12.9.12 The scale of relief from existing severance would be derived from AADT traffic flows and interpreted using criteria from DMRB Volume 11, Section 3 Part 8 – Relief from Existing Severance, as shown in Table 12-6. The roads identified for the assessment would be considered to be those within a rural area.

Table 12-6: Level of Relief from Existing Severance DMRB, Volume 11, Section 3, Part 9)

	Slight	Moderate	Substantial
Built-Up Area	c.30%	30-60%	60%+
Rural Area	60-75%+	75-90%+	90%+

[1] Describing a junction or intersection where two or more transport axes cross at the same level (or grade). An at-grade intersection may require a traffic-control device such as a stop sign, traffic light or railway signal to manage conflicting traffic.

Vehicle Travellers - View from the Road

12.9.13 These would be assessed through site visits to the proposed route undertaken by the landscape architect. The assessment would take account of the vertical alignment of the proposed carriageway in relation to existing ground level and mitigation measures (which could include environmental barriers (for noise and visual screening), false cutting and tree and shrub planting).

12.9.14 This would comprise a qualitative assessment considering changes in the view from the road both with and without the Scheme for users of the following roads identified in Section 1.2. In accordance with DMRB guidance Volume 11 Section 3 Part 9 (Highways Agency, 1993) with views from the road would be categorised as follows:

- No view – road in deep cutting or contained by earth bounds, environmental barriers or adjacent structures
- Restricted view – frequent cuttings or structures blocking the view
- Intermittent view – road generally at ground level but with shallow cuttings or barriers at intervals
- Open view – view extending over many miles, or only restricted by existing landscape features

Vehicle Travellers – Driver Stress

12.9.15 The scale of driver stress would be assessed using the following criteria extracted from DMRB Volume 11, Section 3, Part 9 (Tables 12-7 and 12-8).

Table 12-7: Driver Stress Ratings for Single Carriageway Roads (DMRB, Volume 11, Section 3, Part 9)

Average hourly flow per lane, in flow Units/1 hour	Average Journey Speed (km/h)		
	Under 50	50 – 70	Over 70
Under 600	High	Moderate	Low
600 – 800	High	Moderate	Moderate
Over 800	High	High	High

Table 12-8: Driver Stress Ratings for Dual Carriageway Roads (DMRB, Volume 11, Section 3, Part 9)

Average hourly flow per lane, in flow Units/1 hour	Average Journey Speed (km/h)		
	Under 60	60 - 80	Over 80
Under 1200	High	Moderate	Low
1200-1600	High	Moderate	Moderate
Over 1600	High	High	High

12.10 Assumptions and Limitations

12.10.1 Baseline data within the assessment would largely rely upon data from third parties. Therefore, the assessment within the ES would rely on the accuracy of this data.

13 ROAD DRAINAGE AND THE WATER ENVIRONMENT

13.1 Introduction

13.1.1 This chapter details the proposed scope of work for the assessment of the Scheme's potential effects on road drainage and the water environment. The aims of this chapter are to:

- Define the study area
- Detail the requirements of the NN NPS for the assessment
- Present the consultations undertaken and proposed
- Explore the baseline information that has been collected and provide information on further baseline information to be collated through desk study or surveys
- Identify the value of environmental resources and key receptors
- Outline the potential significant effects that would occur and describe the potential mitigation measures
- Describe proposed level and scope of assessment
- Detail the methodology that would be used to assess effects on road drainage and water environment
- Identify any assumptions and limitations

13.1.2 The Scheme has the potential to result in effects on road drainage and the water environment, in particular, on the flood risk, water quality and water resource attributes of surface water and groundwater receptors within the study area.

13.1.3 There may be interrelationships related to the potential effects on road drainage and the water environment, and other disciplines comprising:

- Chapter 9: Biodiversity
- Chapter 14: Geology and Contaminated Land

13.2 Study Area

13.2.1 The study area has been defined to include all land within a 1km buffer of the Scheme. This study area (comprising a buffer 500m either side of the route) has been set to include watercourses and their floodplains that are crossed by or potentially receive discharges of highway runoff from the Scheme and surface and groundwater resources supporting licensed abstractions or receiving consented discharges. The study area has been determined in line with guidelines within Volume 11 of DMRB and following consideration of the recently issued Interim Advice Note 125/15 – Environmental Assessment Update, and is considered to be sufficient for the inclusion of all potentially affected water resources.

13.3 NN NPS Requirements

13.3.1 The NN NPS sets out the need for, and Government's policies to deliver, development of NSIPs on the national road and rail networks in England.

13.3.2 Paragraph 5.221 sets out that where a development is likely to have significant adverse effects on the water environment, NN NPS requires that the applicant

ascertain the existing status of, and carry out an assessment of the impacts of the proposed Scheme on, water quality, water resources and physical characteristics as part of the environmental statement, which should describe:

- The existing quality of waters affected by the proposed scheme
- Existing water resources affected by the proposed scheme and the impacts of the proposed scheme on water resources
- Existing physical characteristics of the water environment (including quantity and dynamics of flow) affected by the proposed scheme, and any impact of physical modifications to these characteristics
- Any impacts of the proposed scheme on water bodies or protected areas under the Water Framework Directive (WFD) and Source Protection Zones (SPZs) around any potable groundwater abstractions
- Any cumulative effects

13.3.3 The NN NPS also states that development proposals should have regard to the relevant River Basin Management Plan (RBMP) and the requirements of the WFD (including Article 4.7) and its daughter directives, including those on priority substances and groundwater. In terms of WFD compliance, the overall aim of projects should be no deterioration of the ecological status of waterbodies.

13.3.4 All of the characteristics listed in paragraph 1.3.2 that are relevant to the water environment within the study area have been included in the scope of this assessment.

13.3.5 NN NPS also encourages pre-application discussions with all relevant regulators to begin as early as possible. Details of the consultation undertaken to date and proposed in future stages of the environmental assessment are summarised in Table 13-1.

13.3.6 Paragraph 4.48 of NN NPS highlights that discharges from a scheme which affect water quality may be subject to separate regulation under the pollution control framework or other consenting or licensing regimes. It also highlights that there are control regimes relating to works to, and structures in, on, or over controlled waters. The NN NPS requires that relevant permissions are obtained for any such activities within the development that are regulated under those regimes. It is proposed to consult with the relevant regulatory authorities with regard to consents and licensing for Scheme activities.

13.3.7 With regard to flood risk and surface water drainage, the NN NPS supports the NPPF and Paragraphs 5.92 to 5.94 explain that essential transport infrastructure is permissible in areas of high flood risk, subject to satisfaction of the NPPF Exception Test. An objective of the NN NPS is for schemes to contribute towards reducing the risk of flooding, stating that considerations during design should include design standards for drainage systems, interactions with floodplains and watercourses and maintenance standards. Applications for all projects in Flood Zones 2 and 3 and projects of 1 hectare or greater in Flood Zone 1, should be accompanied by a FRA. The scheme should also adhere to any national standards for Sustainable Drainage Systems (SuDS).

13.3.8 The Scheme has been subject to a Stage 2 FRA that has been prepared in

consultation with the EA and informed by hydrological and hydraulic modelling of a number of watercourses in the study area. The FRA would be further developed to inform the design of any necessary flood risk management measures and to provide data to feed into the ES. A concept, Stage 2, Drainage Strategy would also be developed into a drainage design that centres on the application of SuDS, appropriate to local conditions to sustainably manage highway runoff.

13.4 Consultation Undertaken and Proposed

13.4.1 Table 13-1 presents details of consultations undertaken to date during the options phase along with consultation proposed to be undertaken for the ES.

Table 13-1: Details of consultations which have been undertaken and proposed

Consultations Undertaken	Date	Information Obtained	Consultation Proposed
Environment Agency	January 2017 to date	Baseline flood risk information including tidal flood levels for the Wyre estuary, fluvial flood models of the Horsebridge and Main Dykes, flood defence information. Details of licensed abstractions and consented discharges. Consultation with the EA during the options phase regarding the FRA determined the EA do not envisage any 'show stoppers' with flooding and the Scheme.	Further consultation with regard to the FRA and to scope any requirement to undertake a Water Framework Directive Assessment.
Lead Local Flood Authority (Lancashire Borough Council)	January 2016	Baseline flood risk information – flood risk from local sources (surface water, groundwater)	Further consultation to refresh baseline data sets and to agree surface water drainage concepts. Details of private (unlicensed) water supplies

13.5 Baseline Information

Baseline Information Obtained/Surveys Undertaken

13.5.1 During the options stage of the Scheme baseline information was collected via a desk study, drawing on published data, to identify those waterbodies likely to be affected by the Scheme. The hydrology and hydrogeology of the study area was characterised and whilst no site-specific surveys were undertaken a Stage 2 FRA was also commenced and preliminary discussions started. The baseline data

obtained to date is presented in Figures 13.1, 13.2 and 13.3 at Appendix A.

Surface and Groundwater Features

13.5.2 The Scheme is located to the south of the estuary of the River Wyre, an EA Main River that becomes tidally influenced below the weir at St Michael's and from Skippool, just downstream of Shard Bridge, to Fleetwood, is designated as part of the Wyre Estuary Country Park. The tidally influenced reach of the river drains a catchment area of approximately 320km^2 and the river discharges into the Irish Sea at Fleetwood.

13.5.3 Other surface water features in the study area include the Main Dyke and the Horsebridge Dyke (both EA Main River), which drain to the Wyre estuary via the Skippool Creek at the western extent of the study area and an unnamed watercourse (referred to as the Pool Foot Creek) that crosses Garstang New Road to the east. Main Dyke has a catchment of approximately 30km^2 and the Horsebridge Dyke drains a catchment of approximately 10km^2. Both watercourses have tidal gates that prevent the propagation of the tides upstream. Surface waterbodies are illustrated in Figure 13.1 at Appendix A.

13.5.4 The agricultural nature and low-lying topography of the study area means that there are also a number of existing field drains routing through the study area, and many of the agricultural fields also contain a number of ponds.

13.5.5 The study area receives an average annual rainfall of approximately 930mm and is underlain by soils that are described as reddish fine loamy over clayey soils with slowly permeable sub soils.

Groundwater Quality and Resources

13.5.6 Since April 2010, the EA has used a new system of designating aquifers to be consistent with the WFD. These designations reflect the importance of aquifers in terms of groundwater as a resource (drinking water supply) but also their role in supporting surface water flows and wetland ecosystems. The aquifer designation data is based on geological mapping provided by the British Geology Society (BGS) and is illustrated in Figure 13.2 at Appendix A.

13.5.7 The study area is underlain by one type of bedrock aquifer designation, 'Secondary B', defined as predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. With regard to superficial (drift) deposits, across the majority of the study area deposits are classified as Secondary (undifferentiated), assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

13.5.8 Aquifer status is also assessed under the EA's commitments to the WFD and for the study area is reported in the RBMP for the North-West (EA, 2015). There is one groundwater body underlying the study area, the West Lancashire Quaternary Sand and Gravel Aquifer (Waterbody ID GB41202G912700).

13.5.9 The current quantitative quality of this groundwater unit is 'Good', meaning that the level of groundwater in the aquifer (as affected by direct and indirect abstractions)

meets the criteria set out in Annex V (2.1.2) of the WFD. Its current chemical quality is also identified as 'Good', meaning that the concentrations of pollutants in the groundwater body do not currently exceed the criteria set out in Article 3 of the Groundwater Daughter Directive (2006/118/EC) and there is no upward chemical trend.

13.5.10 Groundwater SPZs have been defined by the EA to safeguard wells or springs used for drinking water from contamination. The EA website confirms that there are no groundwater SPZs within the study area.

Surface Water Quality

13.5.11 With regard to surface water quality the River Wyre and Main Dyke are both monitored under the WFD, as illustrated in Figure 13.3 at Appendix A. Based on the second cycle of WFD RBMPs the River Wyre (Waterbody ID GB531207212200) within the study area is a heavily modified, transitional waterbody (estuarine) and is classified as having an overall ecological status of Moderate Potential. Potential is limited by a number of supporting elements/conditions, including dissolved inorganic nitrogen concentrations and the tidal/freshwater flow regime. A target of reaching Good ecological potential by 2027 has been set and a number of mitigation measures are detailed in the RBMP that are not yet in place. These include managed realignment of flood defences and replacement of hard bank reinforcement with soft engineering solutions. This water body achieves a chemical status of Fail against the priority substances and priority hazardous substances categories.

13.5.12 Main Dyke, also known as the Hillylaid Pool, (Waterbody ID GB112072066120) is classified as a heavily modified waterbody within the study area, having an overall ecological status of Moderate Potential. The RBMP does not contain details of the factors that limit ecological potential but sets a target for this waterbody of reaching Good ecological potential by 2027. The Main Dyke achieves Good status with regard to chemical quality under the WFD.

13.5.13 The Horsebridge Dyke, unnamed watercourses and field drains that flow through the study area are not monitored under the WFD and no data are available to define the water quality supported by these waterbodies. However, it is considered that their quality can be inferred according to their function surrounding land uses and flow regime.

13.5.14 The EA has supplied details of pollution incidents that have had an effect on the water environment within the study area. In the ten-year period of record (2004 to 2014) a total of sixteen incidents were recorded, all of which were classified as Category 3 (Minor) incidents. Pollutants comprised raw sewage, oils/fuel and fire-fighting runoff and predominantly impacted the Main Dyke.

Flood Risk

13.5.15 The study area is located in the Lower Wyre sub-area within the Wyre Catchment Flood Management Plan, where the Wyre is contained within an embanked channel and there is potential for flooding from both tidal and fluvial sources. The preferred flood risk management policy applicable to the study area is to store water or manage run-off in locations that provide overall flood risk reduction or environmental benefits.

13.5.16 The EA Flood Map for Planning illustrates that lands within parts of the study area, particularly towards the eastern and western boundaries, are potentially subject to flood risk, located in Flood Zone 3. This flood zone shows the area that could be affected by flooding from the sea with a 1 in 200 or greater chance of happening each year or from a river with a 1 in 100 or greater chance of happening each year. Some areas are also indicated to benefit from protection by flood defences.

13.5.17 Existing flood defences comprise a mixture of walls, embankments and areas of raised ground adjacent to the banks of the Main Dyke and the Wyre Estuary, in addition to the Skippool Tidal Barrier and Tidal Doors. The existing Skippool Tidal Barrier is located on Main Dyke about 200m north of the A585 at Skippool Bridge while the flap on Horserbridge Dyke is at the north end of Skippool Clough culvert at Skippool roundabout.

13.5.18 More detailed information on flood risk from rivers (fluvial) has been provided by the EA via a Product 4 data request that included hydrology and hydraulic models of the Main Dyke and Horsebridge Dyke in the area of interest. These models have been reviewed and updated and have been used to define baseline flood risk and any effects of the Scheme on this baseline.

13.5.19 The flood modelling completed to date, results of which are fully reported in the Stage 2 FRA (February 2017), has demonstrated that the Scheme is not at risk of fluvial flooding from the Main Dyke / Horsebridge Dyke during the 1% annual exceedance probability (AEP) or 0.1% AEP flood events. When climate change is taken into account, with allowances of up to 70% increase in the peak 1% AEP flows, no flooding of the Scheme is predicted.

13.5.20 A qualitative assessment of fluvial flood risk from the Pool Foot Creek also indicates that the Scheme would not be at risk of fluvial flooding from this source.

13.5.21 The Stage 2 FRA has also considered the impacts of a high tide in the River Wyre combined with high river flows in the Main and Horsebridge Dykes. High tidal levels in the River Wyre trigger flaps on the outfalls of these watercourses to close. This is referred to as ‘tide locking’, when the watercourses are prevented from discharging into the estuary. The effect of the tide locking has been modelled and results show that baseline 1% AEP floodwater levels in the Main Dyke and Horsebridge Dyke increase by approximately 300mm under tide locked conditions. The proposed Scheme does not increase flood risk to surrounding areas during a tide locking scenario; flood extents are reduced because of a quicker drain down time due to replacing the existing culverts to a clear span structure at Skippool Bridge.

13.5.22 With regard to tidal flood risk, the study area is defended from regular direct inundation from the Wyre estuary by EA maintained, raised flood defences, described in Section 13.5.17, and areas of higher ground along the estuary frontage. The EA flood map indicates that the existing alignment of the A585 is at risk of tidal flooding during a 0.5% AEP tidal event in two locations; Skippool Junction and an area to the west of the Windy Harbour Junction, local to the Pool Foot Creek. Data from the EA tidal Wyre model has been requested and would be used to understand tidal flood risk to the scheme and identify appropriate mitigation and any additional measures required to manage this source of flood risk.

13.5.23 The risk of flooding from surface water is defined by EA mapping as very low (land

assessed as having a less than 1 in 1000 (0.1%) annual chance of flooding) along the majority of the existing alignment of the A585 between Skippool and Windy Harbour. There are localised areas of the road at higher risk, including reaches at the eastern extent, near Little Singleton and at the junction with Shard Road. In the wider study area lands are also generally at low or very low risk of flooding from this source. There are, however, localised areas at higher risk, for example, an area that spans the existing A585 alignment near Barnfield Manor which is at high risk (chance of flooding of greater than 1 in 30 (3.3%)), of surface water flooding.

13.5.24 The existing risk of flooding from groundwater has been assessed with reference to BGS mapping. The mapping shows that the majority of the study area is classified as having limited potential for groundwater flooding to occur.

13.5.25 Artificial sources of flooding include reservoirs, canals and other sources of stored water. The EA's maximum extent of flooding from reservoirs does not extend into the study area and there are no canals in the vicinity. The baseline risk of flooding from artificial sources within the study area is therefore concluded to be low.

Abstractions and Discharges

13.5.26 Information about licensed abstractions and consented discharges supported by surface and groundwater resources, within the study area was requested from the EA.

13.5.27 In consultation with the EA it has been confirmed that there are no licensed abstractions within the study area that are supported by either groundwater or surface water resources.

13.5.28 The EA hold records of seven consented discharges within the study area. These comprise discharges from the public sewer network, trade effluent and a recreational facility. Discharges are received by the Wyre Estuary, the Skippool Creek, the Main Dyke and a tributary of this watercourse.

Other Baseline Information to be Obtained

13.5.29 To inform the ES Lancashire County Council as the Lead Local Flood Authority (LLFA) would be contacted to refresh baseline data sets and to agree surface water drainage concepts. Detailed grids of tidal flood level data have also been requested from the EA and would be used to inform the next stages of the scheme design. Details of small, unlicensed abstractions (private water supplies) would also be collected.

13.6 Value of Environmental Resources and Receptors

13.6.1 Within the study areas described in Section 13.2, water environment receptors have been identified and their attributes and the services that these waterbodies support/provide have been characterised using the baseline data sets collected to date.

13.6.2 Value (or importance) has then been assigned with consideration of existing quality, scale, rarity and substitutability, to a category, ranging from Very High to Low in accordance with guidelines within HD45/09 of the DMRB. Table 13-2 provides a summary of the value (importance) assigned to the individual water receptors within the study area.

Table 13-2: Value of Surface and Groundwater Receptors

Receptor	Attribute	Value / Sensitivity	Rationale
River Wyre / Wyre Estuary and associated defended tidal floodplain	Water quality	Medium	Overall ecological status of Moderate Potential but WFD chemical quality status of Fail
	Flow conveyance & Storage	High	Tidal FZ3 within study area, with a floodplain and defences protecting between 1 and 100 residential properties or industrial premises from flooding.
	Water Supply / Transport & Dilution of waste effluents	Medium	No licensed abstractions supported within the study area but receives consented discharges from the public sewer network
Main Dyke/Horsebridge Dyke and associated tidal/fluvial floodplain	Water quality	Medium	Overall ecological status of Moderate Potential (inferred for Horsebridge Dyke).
	Flow conveyance & Storage	High	Tidal (due to influence from Wyre Estuary) and fluvial FZ3 within study area, with a floodplain and defences protecting between 1 and 100 residential properties or industrial premises from flooding.
	Water Supply / Transport & Dilution of waste effluents	Medium	No licensed abstractions supported within the study area but receives consented discharges from the public sewer network
Local Drains	Water quality	Low	Likely to receive agricultural runoff and be subject to ephemeral drying out/pooling of water
	Flow conveyance & Storage	Medium	Serve a land drainage function at the local scale

Receptor	Attribute	Value / Sensitivity	Rationale
Bedrock Aquifers	Groundwater quality	High	Achieve Good WFD chemical water quality status
	Water quantity/water supply	Medium	Current quantitative quality of this groundwater unit is 'Good' but within the study area there are no SPZs and the aquifer is not known to support any licensed abstractions.
Superficial Aquifers	Water quantity/water supply	Low	Secondary (undifferentiated) aquifer, not known to support any licensed abstractions within the study area

13.7 Potential Effects including Monitoring and Mitigation Measures

Construction Phase

13.7.1 During construction of the Scheme adverse effects on the water quality and flow conveyance attributes of surface water receptors would be avoided by implementation of a CEMP documenting best practice pollution prevention measures and construction site drainage management proposals. With regard to groundwater receptors, implementation of the CEMP would also minimise the potential for the pollution of groundwater resources.

13.7.2 With regard to groundwater levels and flow paths there is considered to be potential for localised detriment should dewatering be necessary, particularly during construction of the section of the scheme that is in cut

Operation Phase

13.7.3 Possible significant effects for surface waters include increased flood risk as a result of new watercourse crossings/modification of existing crossings, loss of floodplain storage and drainage of additional impermeable land cover. Possible effects on groundwater include long term changes in groundwater level and flow paths due to the creation of cuttings.

13.7.4 In addition, there is also potential for detriment to the water quality of groundwater and surface waterbodies associated discharges of runoff from the highway, both under routine circumstances and linked to accidental spillage events.

Potential Mitigation Measures

13.7.5 Potential mitigation measures include:

- Design of appropriate watercourse crossings or watercourse diversions. Modelling undertaken to date indicates that at the existing crossing of the Main Dyke, by replacing the existing Skippool Bridge culverts (two 1.8m diameter) with

a 14.1m clear span bridge, upstream floodplain extents are significantly reduced by the removal of the existing restriction to flow

- Providing culverts under the embankment within the Main Dyke floodplain to allow floodwater to pass through the embankment
- Implementation of best-practice construction phase pollution prevention methods as outlined in industry standard guidance
- Dewatering operations in accordance with EA environmental permit conditions
- Treatment of construction and operation drainage discharges prior to entry into the water environment utilising SuDS features such as swales and ponds
- Provision of storage to attenuate the rates of discharge of surface water drainage from the operation Scheme

13.8 Proposed Level and Scope of Assessment

13.8.1 An assessment of the effects of discharges of runoff from the highway to groundwater via soakaways on groundwater quality and for the potential for the Scheme to impact on existing groundwater flow regimes and quantity has been scoped into the assessment. The Scheme involves the creation of some potentially deep cuttings and associated dewatering, and there is potential for additional volumes of highway runoff and new discharge outfalls, some of which may be to soakaway. The level and scope of assessment with regard to groundwater effects would therefore be confirmed in consultation with the EA

13.8.2 Given the nature of the proposed works, with the potential for discharge of additional volumes of highway runoff and the construction of new discharge outfalls, consideration of operation phase water quality impacts has been scoped into of this assessment. The assessment would be informed by calculations undertaken using the Highways Agency Water Risk Assessment Tool (HAWRAT). The requirement to undertake a standalone Water Framework Directive Assessment would be confirmed in consultation with the EA.

13.8.3 In summary the assessment in the ES would cover effects on flooding, surface water drainage and groundwater levels/flows during construction and operation. It would also cover operation groundwater quality and surface water quality effects.

13.8.4 In addition, a full Flood Risk Assessment would be produced, in consultation with the EA and LLFA, to inform the ES, inclusive of a Surface Water Drainage Strategy.

13.8.5 Based on the work undertaken to date during the options phase no significant effects are anticipated on surface water quality during construction. During construction of the Scheme adverse effects on the water quality and flow conveyance attributes of surface water receptors would be avoided by implementation of a CEMP documenting best practice pollution prevention measures and construction site drainage management proposals. Therefore, it is proposed that assessment of construction impacts are scoped out of the ES.

13.9 Proposed Methodology Including Significance

Guidance

13.9.1 The assessment of potential effects on the water environment would follow the

guidance set out in Part 10 of Volume 11 of the DMRB (Highways Agency, 2009).

13.9.2 Reference would also be made to the Defra/EA Groundwater protection position statements and various CIRIA publications which set out current best practice measures toward preventing and mitigating construction phase impacts on surface and groundwater resources.

Proposed Assessment Methodology

Study Area for the EIA

13.9.3 Refer to Section 13.2.

Assessment Periods/Scenarios

13.9.4 The assessment would consider the construction phase of the Scheme, assuming a construction period of two years, and the operation phase. In line with DMRB guidelines, the significance of the environmental effects of the operation phase would be defined for Do-Minimum and Do-Something scenarios in the opening year (assumed to be 2022) and a future (design) year. The future year is typically defined as Year 15 following completion of all construction works (2037).

13.9.5 Where relevant, the assessment would differentiate between short term, temporary effects and long term/permanent effects. With regard to the surface water environment examples of short term effects include temporary loss of floodplain storage volume due to establishing construction compounds in the floodplain or the short-term pollution risk associated with the construction of permanent watercourse crossings.

Future Baseline

13.9.6 With regard to flood risk and drainage, future baseline conditions would be forecast, drawing on current best practice guidelines, taking into account the likely impacts of climate change on river flows, rainfall intensities, tidal flood levels/ storm surge and groundwater levels, and these future conditions would be represented in any quantitative modelling assessments undertaken to inform the Scheme drainage design and FRA.

13.9.7 The likely effects of implementation of future cycles of WFD management plans on the ecological and chemical quality of waterbodies would be considered when assigning value to water environment resources and receptors.

13.9.8 Traffic modelling data, specifically modelled average AADT and percentage of HGVs, relevant to the assessment periods and scenarios described in paragraph 13.9.4 would be used to inform the methods set out in HD45/09 (and any subsequent updates) of the DMRB for assessing the pollution impacts the operation phase of the Scheme on surface and groundwater bodies.

Significance Criteria

13.9.9 The assessment of the magnitude of impacts and resulting significance of effects on the water environment would be made using assessment criteria drawn from Part 10 of Volume 11 of the DMRB – HD45/09, reflecting any published Highways England updates, which it is understood are upcoming.

13.9.10 The criteria for assigning impact magnitude consider the scale/extent of the predicted change and the nature and duration of the impact. Magnitudes range from

Major Adverse, representing a total loss of an attribute to Negligible where an impact is of insufficient magnitude to affect use or integrity, to Major Beneficial. Whilst examples of each category of impact magnitude are provided in table A4.4 of HD45, professional judgement may be needed in assigning a magnitude of impact. Residual impacts would be identified considering all mitigation measures.

13.9.11 Estimating the significance of effects would then be undertaken with reference to the matrix table (Table A4.5) presented in HD45/09, DMRB Volume 11, Section 3, Part 2 which combines the importance (value) of the attribute of a water feature and the predicted magnitude of impact. Significance ranges from Very Large to Neutral and may be positive or adverse, as illustrated in Table 13-3.

13.9.12 When more than one significance outcome is possible, professional judgement is used to determine which is most appropriate, on a case by case basis and ensuring regard to the precautionary principle.

Table 13-3: Criteria for Determining the Significance of Effects (DMRB Volume 11, Section 3, Part 2, HD45/09)

		MAGNITUDE OF IMPACT			
		Negligible	**Minor**	**Moderate**	**Major**
VALUE OF ATTRIBUTE	**Very High**	Neutral	Moderate	Large	Very Large
	High	Neutral	Slight/ Moderate	Moderate/ Large	Large/ Very Large
	Medium	Neutral	Slight	Moderate	Large
	Low	Neutral	Neutral	Slight	Moderate

13.10 Assumptions and Limitations

13.10.1 Quantitative assessments reported in the ES would be based upon the accuracy and assumptions of data received third parties. These assumptions and limitations would be reported within the ES.

14 GEOLOGY AND CONTAMINATED LAND

14.1 Introduction

14.1.1 This chapter details the proposed scope of work for the assessment of the Scheme's potential effects on geology and contaminated land. The aims of this chapter are to:

- Define the study area
- Detail the requirements of the NN NPS for the assessment
- Present the consultations undertaken and proposed
- Explore the baseline information that has been collected and provide information on further baseline information to be collated through desk study or surveys
- Identify the value of environmental resources and key receptors
- Outline the potential significant effects that would occur and describe the potential mitigation measures
- Describe proposed level and scope of assessment
- Detail the methodology that would be used to assess effects on geology and contaminated land
- Identify any assumptions and limitations

14.1.2 There may be interrelationships related to the potential effects on geology and contaminated land, and other disciplines comprising:

- Chapter 9: Biodiversity
- Chapter 12: People and Communities
- Chapter 13: Road Drainage and the Water Environment

1.1.2 Note: Soils are not covered within this chapter they are covered under 'People and Communities'.

14.2 Study Area

14.2.1 The study area comprises a 50m corridor either side of the Scheme extending to 1km for Environment Agency registered waste sites, abstraction points and geological features.

14.2.2 A 50m buffer zone was selected because the geology along the Scheme comprises glacial till and tidal flat deposits (predominantly clay and silt) underlain by mudstone bedrock. These soils and rocks tend to have a low permeability, which means that groundwater does not easily flow through them. Similarly, contamination is unlikely to move easily or very far in low permeability soils and rocks.

14.3 NN NPS Requirements

14.3.1 There are limited details relating directly to geology and contaminated land within the NN NPS.

14.3.2 The NN NPS states that *"Applicants should identify any effects, and seek to minimise impacts, on soil quality, taking into account any mitigation measures proposed. Where possible, developments should be on previously developed*

(brownfield) sites provided that this is not of high environmental value. Where developments are on previously developed land, applicants should ensure they have considered the risk posed by land contamination and how it is proposed to address this."

14.3.3 The NN NPS 5.117 and 5.118 covers land instability in a separate section. This relates to the effects such as landslides, subsidence or ground heave which could cause harm to human health, local property, associated infrastructure and the wider environment if not considered during development.

14.3.4 A preliminary assessment of ground instability should be undertaken, including investigation to ascertain that the site is and would remain stable or any issues can be dealt with as part of the development. The site needs to be assessed in context of surrounding areas where subsidence, landslides and land compression could threaten the development during its anticipated lifetime or damage neighbouring land or property.

14.4 Consultation Undertaken and Proposed

14.4.1 To date no consultation has been undertaken in relation to the study area or to inform the options assessments. Table 14-1 presents consultations proposed to inform the ES.

Table 14-1: Details of proposed consultations

Consultations Proposed	Information to be Obtained
Wyre Borough Council	To obtain information from the Groundwater and Contaminated Land officer
Fylde Borough Council	To obtain information from the Groundwater and Contaminated Land officer
Local Geological Groups	To obtain information about local geological resources / features

14.5 Baseline Information

Baseline Information Obtained/Surveys Undertaken

14.5.1 The following section summarises the baseline information obtained from desk based research of available data during the options phase. The baseline conditions are summarised in Table 14-2 and shown on Figure 14.1 at Appendix A.

Table 14-2: Summary of Baseline Conditions

Geology	The Scheme
Geology Source - British Geological Survey map viewer	Solid Geology is the Sidmouth Mudstone Member.
	Superficial Deposits underlying the eastern part of the Scheme are Devensian Glacial Till. The middle section is underlain by Peat deposits (approx. 250m wide) with the western part underlain partially by Tidal Flat deposits, comprising clay and silt and partially by the Devensian Glacial Till.

Geology	The Scheme
	Made Ground associated with previous / current development may be present along the proposed Scheme.
Hydrogeology	Aquifer Status Solid Geology is classified as a Secondary B Aquifer[2], Superficial Deposits are Secondary (undifferentiated)[3]. Refer to Figure 13.1 at Appendix A.
	Abstractions Refer to Section 13.5.
	SPZ Refer to Section 13.5.
Hydrology	Refer to Section 13.5.
Geodiversity heritage sites, SSSI and RIGS Source: MAGIC website and GeoLancashire website.	There are no recorded geodiversity heritage sites, Regionally Important Geology sites (RIGS) or geological SSSI within 1km of the Scheme.
Waste Activities; Source - EA database – "What's in my backyard"	Skippool Marsh and Skippool Creek historic landfill site located approximately 150m north of the Scheme. Skippool Marsh Landfill received commercial waste until 1972. Skippool Creek was used for leachate control from Skippool Marsh landfill. Poulton Railway Cutting historic landfill is 750m south west. Fylde skip hire historic landfill is 675m southwest of the central section of the proposed Scheme. Poulton Industrial Estate historic landfill and Kingscourt development authorised landfill are located 900m south west of the central part of the Scheme. Windy Harbour holiday centre historic landfill is 750m north of the eastern end of the Scheme. Larbreck Hill Farm historic landfill is 500m to the east of the end of the Scheme.

[2] Secondary B Aquifer is defined as being predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering.

[3] Secondary (undifferentiated) Aquifer is a designation assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

Geology	The Scheme
Potentially contaminative land uses (other than EA registered waste) within 50m buffer. Records from Landmark Information Group	10 sites with unknown filled ground (Pond, marsh, river, stream, dock etc.) 3 pollution incidents 1 pollution prosecution (EA News Release 11/03/1998, Polluting a field in Singleton with raw sewage). 11 discharge consents (sewage discharge) 1 petrol station 1 historic tanks 8 sites with potentially contaminative land use 1 area of mapped artificial ground (Made ground)
Unexploded Ordnance (UXO) – Zetica	A preliminary desk study was undertaken by Zetica which concluded that no readily available records have been found indicating that bombs fell on the Site, which was in a region with a very low bombing density during WWII. Additionally, no evidence of any significant military activity likely to provide a source of UXO hazard has been identified on the Site. It is considered that the Site is likely to have a Low UXO hazard level.

Other Baseline Information to be Obtained

14.5.2 Historical mapping would be reviewed to understand historic land uses that could have resulted in ground contamination that may be mobilised by the Scheme.

14.5.3 A Ground Investigation would be undertaken to inform the Scheme design. The results of this investigation would be reviewed to inform the likelihood for disturbance of contaminated materials as well as details about groundwater quality and groundwater depths. Land stability would be assessed based on the results of the ground investigation.

14.6 Value of Environmental Resources and Receptors

14.6.1 Based on the baseline information detailed above Table 14-3 presents the potential resources / receptors that were identified during the options assessment. They have been assigned a value in accordance with a five-point scale identified in Table 14-4.

14.6.2 The potential impact to hydrogeology and hydrology features in relation to impact from contaminated land is considered within this chapter and are therefore give a value in Table 14-3 below.

14.6.3 Construction and Maintenance Workers are not considered as receptors in the table below as they are governed by other Health and Safety legislation such as CDM Regulations.

Table 14-3: Value of Receptors

Receptor	Value
Geology	Negligible - little local geological interest
Human Health Local residents near to Scheme Road Users after construction	 High Low
Hydrogeology / Groundwater	High in area of SPZ2 / Low - Secondary Aquifer
Hydrology (Surface Water)	Medium

14.7 Potential Effects including Mitigation Measures

Construction Phase

14.7.1 Prior to the enabling works for the Scheme, adequate investigation would be undertaken to ensure that the baseline land quality along the preferred Scheme is known and that associated hazards and unacceptable risks to identified receptors (if any) can be mitigated prior to any excavation / construction, or can be integrated into the Scheme design.

14.7.2 Sources of potentially contaminating materials include the storage and use of fuels, oils and chemicals and the use of cement based products. These could cause a deterioration of the underlying soils through spillages / leakages, however these would be appropriately controlled by the application of pollution prevention control measures as detailed above.

14.7.3 Excavated soils / arisings would be appropriately stored on site to ensure that they are suitable for re-use within the Scheme or by others therefore any impacts would be minimal.

14.7.4 Dewatering may be required during the construction of the road especially where cuttings are located which may mobilise contaminants and cause the migration of contamination across a wider area.

Operation Phase

14.7.5 No significant operation effects are anticipated.

Potential Mitigation Measures

Construction

14.7.6 Unsuitable soils identified along the Scheme / land take would be remediated to make them suitable for re-use within the Scheme. This may involve treatment (in-situ or ex-situ), re-use in less sensitive areas within the Scheme or removal to an appropriate soil recycling or landfill facility.

14.7.7 The risk of disturbing contamination outside the immediate road construction site would depend on a number of factors including the actual presence and type of contamination, site-specific ground conditions such as permeability and the depth of excavations/cuttings below the water table. This would be investigated at a later stage of the Scheme design.

14.7.8 Prior to any construction compound areas being prepared, a baseline survey would be undertaken to determine the current land quality in these areas. This would highlight any contamination present, which is likely to be localised. If deemed necessary such areas would be remediated prior to, or as part of, the soil stripping / enabling works.

14.7.9 During stripping / excavation / construction works, a watching brief would be adopted with site workers remaining vigilant so any visual or olfactory signs of contamination are noted and that any contaminated soil is kept separate from other materials. Any suspected contaminated material would be analysed to determine if it is suitable for re-use on site or requires disposal off-site to an appropriate soil recycling or disposal facility.

14.7.10 The full design requirements of the road are currently not known. However, once the ground conditions are established, and should contamination of concern be present, the engineering and geotechnical design would be integrated with those findings, such that new contaminant pathways are not created, (e.g. by the introduction of band drains in the construction of embankments), and that where the current land quality status is satisfactory that this is maintained.

14.7.11 Within the construction site compounds, specific areas would be designated for the storage of chemicals, waste oils and fuel and refuelling activities. These areas would be bunded and placed on hardstanding to prevent downward migration of contaminants. Any transfer of fuel or other potentially contaminated liquids would only take place within a designated fuel transfer area. Drip trays would be provided to reduce the risk of spillages. These areas would be designed with appropriate drainage to ensure any spillages can be isolated.

14.7.12 An Emergency Response / Spill Response Plan would be produced by the Main Works Contractor. Appropriate equipment (e.g. spill kits, absorption mats) would be made easily accessible on-site and personnel would be trained in using them. Clear protocols and communication channels would be provided to ensure that any spillages are dealt with immediately and adequately. This would prevent large areas of soil / geology potentially becoming contaminated and in turn protect surface water quality.

14.7.13 During the construction phase, localised contamination may occur within the compound areas through spillages / leakages of fuel and therefore a repeat baseline survey would be undertaken once the construction has finished and the compound dismantled to demonstrate the area has been returned to its previous state. If contamination has occurred during the lifetime of the compounds, remediation would be undertaken to return the land to its previous land quality state.

14.7.14 The CEMP would include soil handling measures to ensure the protection, conservation and reinstatement of soil material ensuring no detrimental changes to their physical or chemical properties which would make them unusable on site.

14.7.15 The CEMP would also include Environmental Design measures to prevent pollution incidents to receptors during the construction phase. This would be developed further by the Principal Contractor to ensure best practice is utilised and the receptors are protected. The Principal Contractor would prepare detailed method statements and appropriate controls to Scheme receptors. The plan would include best practice pollution prevention guidelines for activities such as excavation and

dewatering, storage of fuels, chemicals and oils, vehicle washing, pollution control and emergency contingency.

14.7.16 The following best practice pollution control techniques with reference to the guidelines in the following publications would be utilised It is noted that these guidelines have been revoked but they are still considered to be best practice:

- EA Pollution Prevention Guidelines 2: Above ground oil storage tank. This includes use of appropriate tanks and installation and maintenance. Secondary containment should hold 110% of the volume of the oil that the tank is designed to store;
- EA Pollution Prevention Guidelines 6: Working on construction and demolition sites. This guidance includes the pollution prevention planning for drainage, excavations, material storage / stockpiles and the use of chemical / hazardous substances and cement / concrete and grout. Waste management and incident response reporting is also detailed in this guidance;
- EA Pollution Prevention Guidelines 7: The safe operation of refuelling facilities. This document provides guidance to prevent damage to surface waters, groundwater, land and air. Good practices are detailed in fuel storage and management that can reduce the environmental risk at a site. These guidelines also refer to the storage and handling of other liquids commonly used in association with fuel storage and dispensing;
- EA Pollution Prevention Guidelines 21: Pollution incident response planning. These guidelines set out best practice for producing an incident response plan to deal with an environmental incident and how this would prevent or reduce environmental damage if such an incident occurs;
- CIRIA C741 – Environmental Good Practice on Site. This document provides practical guidance about managing construction on site to control environmental impacts. It encourages good practice and examines relevant legislation and contractual obligations.

Operation

14.7.17 Once the road has been constructed, the risk to receptors would be reduced due to the nature of the Scheme.

14.7.18 The road surface would restrict the exposure to the geology and soils beneath the road and the impacts to future site users such as road users.

14.7.19 Topsoil would be placed in landscaped areas adjacent to the road which would restrict the risk of exposure to road users to potentially contaminated soils which may be suitable to remain in place.

14.7.20 This road surface would restrict infiltration which in turn would reduce the potential of contaminants (if present) leaching and migration into the wider water environment.

14.7.21 There is a risk to shallow soils and the water environment from road spray and pollution incidents associated with the road usage (e.g. fuel / oil spillages). These would be mitigated to some degree by the drainage system that is installed during the construction of the road. Any soils which are significantly affected by pollution

incidents would be assessed and if necessary removed to reduce the risk of any contamination migrating across a wider area.

14.8 Proposed Level and Scope of Assessment

14.8.1 It is proposed that only construction impacts of the Scheme associated with contaminated land would be assessed within the ES.

14.8.2 There are no RIGS or geological SSSIs within the study area, therefore geology is given a negligible importance and has been scoped out of further assessment.

14.8.3 It is proposed to scope out all operational impacts of the Scheme. The main impact is likely to be from contaminated land and potential effects on hydrogeology. These would be dealt with via application of mitigation measures designed and implemented during the construction phase. Once constructed the road itself would act as a barrier to underlying ground conditions and road users (considered to be low value) would not come into contact with it on a day to day basis.

14.9 Proposed Methodology Including Significance

Guidance

14.9.1 In relation to contaminated land, a source, pathway receptor approach in accordance with Environment Agency CLR11 Model Practices (EA, 2004) would be adopted for assessing risks from contaminated soils / groundwater. Contaminant concentrations when available would be screened against appropriate screening values such as the Suitable 4 Use Levels (S4ULs (LQM / CIEH, 2015). Assessment of significance of the risks would be undertaken using professional judgement with guidance based on CIRIA C552.

Proposed Assessment Methodology

Study Area for the EIA

14.9.2 Refer to Section 14.2.

Assessment Periods/Scenarios

14.9.3 The assessment would consider the impacts during the construction and operation phase. Consideration would be given to the length of the construction phase and the impact this would have on receptors, exposure of soils in construction areas to contaminative material such as fuels.

14.9.4 The operation period would be assessed, but the road itself would form a degree of mitigation and the impacts are likely to be less significant than during the construction phase.

Future Baseline

14.9.5 Future baseline would be assessed by considering the existing site conditions at the time of the start of construction. If any significant changes in ground conditions has occurred since the ground investigation has taken place for example, potential contaminative uses on or near to the route, landslides / stability issues, then additional investigation would be undertaken to confirm the current conditions.

14.9.6 The baseline conditions with regards to geology and contaminated land are not anticipated to alter significantly prior to commencement of the construction of the

Scheme as the majority of the soil and groundwater contamination is historical.

Significance Criteria

14.9.7 For determination of significance criteria for the assessment of effects on the geological resource, guidance would be sought from CLR11, CIRIA C552 and professional judgement.

14.9.8 The value of the identified receptors / resources would be assessed against the criteria shown in Table 14-4. This has been based on the guidance provided in DMRB Volume 11 (Highways Agency, 2009).

Table 14-4: Criteria for Determining Value (sensitivity) of the Geology

Sensitivity/Value	Description of resource (receptor)
Very High	Hydrogeology - Principal groundwater aquifers (Source Protection Zone 1) or contaminated land with highly mobile contaminants) Hydrology – EC Designated Salmonid/Cyprinid Fishery, WFD Class 'High, designated sites such as SAC, SPA, SSSI, SPZ, Ramsar site, salmonid water Human Health – Current / Future users of residential properties with private gardens
High	Hydrogeology - Principal groundwater aquifers (Source Protection Zone 2) or contaminated land with mobile contaminants) Hydrology –WFD Class 'Good', Major Cyprinid Fishery, Species protected under EC or UK habitat legislation. Human Health* – Current / Future users of allotments / public open space and nearby residents
Medium	Hydrogeology - Secondary groundwater aquifers (Source Protection Zone 3) or contaminated land with contaminants of low mobility) Hydrology – WFD Class 'Moderate'. Human Health* – Current / Future users of residential properties without private gardens
Low	Hydrogeology - Secondary groundwater aquifers or contaminated land with immobile contaminants Hydrology – WFD Class 'Poor'. Human Health* – Current / Future users of the completed highway and associated landscaping
Negligible	Hydrogeology - Non-aquifers and brownfield land with negligible contamination Hydrology – WFD Class 'Poor'.

Sensitivity/Value	Description of resource (receptor)
	Human Health* – Current / Future users of commercial / industrial properties

14.9.9 *Duration of exposure to contamination and number of pathways of exposure to contamination increases from commercial/industrial (minimum) to residential with private garden (maximum) land uses. Therefore, future users of industrial sites are considered to be of negligible importance as they would have minimal contact with underlying soils, whilst residential ends users are likely to be in contact with underlying soils on a more regular basis and are therefore of very high value.

14.9.10 The magnitude of impacts would be described using the criteria outlined in Table 14-5.

Table 14-5: Criteria for determining the magnitude (scale) of impact on the Geology and Contaminated Land

Magnitude of impact	Definition
Major adverse	Human Health - Significant harm to a designated receptor (e.g. human health) is likely to arise from an identified hazard at the site without appropriate remedial action. Hydrogeology - Loss of, or extensive change to an aquifer used for potable supply, potential high risk of pollution of groundwater. Hydrology - Loss or extensive change to a fishery, Loss or extensive change to a designated Nature Conservation Site
Moderate adverse	Human Health It is possible that without appropriate remedial action, significant harm to a designated receptor (e.g. human health) could arise to a designated receptor but it is relatively unlikely that any such harm would be severe and if any harm were to occur, it is likely that such harm would be relatively mild. Hydrogeology - Partial loss or change to an aquifer, potential medium risk of groundwater pollution. Partial loss of the integrity of groundwater supported designated wetlands. Hydrology - Partial loss in productivity of a fishery
Minor adverse	Human Health - It is possible that harm could arise to a designated receptor (e.g. human health) from an identified hazard but it is likely that at worst this harm if realised would normally be mild. Hydrogeology - No significant change to an aquifer, potential low risk of pollution to groundwater. Minor effects on groundwater supported wetlands Hydrology – Slight decrease in water quality
Negligible adverse	Human Health There is a low possibility that harm could arise to a designated receptor. In the event of such harm being realised, it is likely to be mild or minor.

Magnitude of impact	Definition
	Hydrogeology The Development is unlikely to affect the integrity of the water environment. Hydrology – Negligible decrease in water quality
No change	No observable effect either adversely or beneficially.
Negligible beneficial	The Scheme may resolve slight impact from existing land or water contamination.
Minor beneficial	The Scheme may resolve minor impact from existing land or water contamination.
Moderate beneficial	The scheme may resolve moderate impact arising from existing land or water contamination
Major beneficial	The Scheme may resolve major impact arising from existing land or water contamination.

14.9.11 The determination of significance of the impact is a factor of the value/sensitivity of the feature/resource (receptor) and the magnitude of the impact (change) as described above. Table 14-6 shows how the significance of effect is derived.

Table 14-6: Determination of the Significance of Impacts (DMRB Volume 11, Section 2, Part 5 HA 205/08 'Assessment and Management of Environmental Effects')

Magnitude of Impact (Change)	Value/sensitivity of Receptor / Resource				
	Very high	High	Medium	Low	Negligible
Major	Very large	Large / very large	Moderate / large	Moderate	Slight
Moderate	Large / very large	Moderate / large	Moderate	Slight	Neutral
Minor	Moderate / large	Moderate	Slight	Neutral	Neutral
Negligible	Slight	Slight	Neutral	Neutral	Neutral
No change	Neutral	Neutral	Neutral	Neutral	Neutral

14.10 Assumptions and Limitations

14.10.1 No specific assumptions or limitations have been identified at this stage.

15 MATERIALS

15.1 Introduction

15.1.1 This chapter details the proposed scope of work for the assessment of the Scheme's potential effects on materials. Note that the Materials topic is proposed to be scoped out of the EIA. This chapter provides the background and rationale for this in a consistent manner to the other topics. The aims of this chapter are to:

- Give information in relation to the study area
- Detail the requirements of the NN NPS for the assessment
- Present the consultations undertaken and proposed
- Explore the baseline information that has been collected and provide information on further baseline information to be collated through desk study or surveys
- Identify the value of environmental resources and key receptors
- Outline the potential significant effects that would occur and describe the potential mitigation measures
- Describe proposed level and scope of assessment
- Identify any assumptions and limitations

15.1.2 Note that this section does not make reference to impacts associated with the offsite manufacture of products or the off-site extraction of primary materials. These stages of the products' or material resources' life-cycles are outside the scope of this assessment due to the range of unknown variables associated with the extraction and manufacturing processes.

15.1.3 The term 'materials' was introduced within the DMRB Volume 11 in August 2009 and embraces the main material resources required to construct the Scheme and construction-related wastes.

15.1.4 This section outlines the potential effects resulting from the use of material resources associated with the works and waste management in the construction, demolition and excavation (CD&E) phases of the Scheme. It also assesses potential embodied carbon impacts associated with material resources to be used and the management of waste.

15.1.5 There may be interrelationships related to the potential effects on material resources, and other disciplines.

15.1.6 Therefore, please refer to the following chapters:

- Chapter 13: Road Drainage and the Water Environment
- Chapter 14: Geology and Contaminated Land

15.2 Study Area

15.2.1 A specific study area for the materials assessment has not been identified so a whole market approach (UK wide) would be used to procure materials required for the Scheme. Efforts would be made to source materials locally whenever possible.

15.2.2 The study area for waste is defined as the area within the recognised administrative

boundaries for Lancashire and Great Manchester.

15.3 NN NPS Requirements

15.3.1 The materials aspects of the NN NPS are presented from paragraphs 5.39 through to paragraph 5.45.

15.3.2 The NN NPS provides information regarding what should be included in the applicant's assessment in paragraph 5.42, which states that:

"The applicant should set out the arrangements that are proposed for managing any waste produced. The arrangements described should include information on the proposed waste recovery and disposal system for all waste generated by the development. The applicant should seek to minimise the volume of waste produced and the volume of waste sent for disposal unless it can be demonstrated that the alternative is the best overall environmental outcome".

15.3.3 In relation to decision making paragraphs 5.43, 5.44 and 5.45 provide advice to the decision maker (the SoS) which should be used when determining whether a scheme should receive consent:

5.43 The Secretary of State should consider the extent to which the applicant has proposed an effective process that would be followed to ensure effective management of hazardous and non-hazardous waste arising from the construction and operation of the proposed development. The Secretary of State should be satisfied that the process sets out:

- *any such waste would be properly managed, both on-site and off-site;*
- *the waste from the proposed facility can be dealt with appropriately by the waste infrastructure which is, or is likely to be, available. Such waste arisings should not have an adverse effect on the capacity of existing waste management facilities to deal with other waste arisings in the area; and*
- *adequate steps have been taken to minimise the volume of waste arisings, and of the volume of waste arisings sent to disposal, except where an alternative is the most sustainable outcome overall.*

5.44 Where necessary, the Secretary of State should use requirements or planning obligations to ensure that appropriate measures for waste management are applied.

5.45 Where the project would be subject to the Environment Agency's environmental permitting regime, waste management arrangements during operations would be covered by the permit and the considerations set out in paragraphs 4.48 to 4.56 would apply.

15.3.4 The ES chapter would present a forecast of the waste likely to arise from the Scheme and assesses the quantity of waste likely to arise from the Scheme against the capacity of the study area's waste management facilities.

15.3.5 The ES chapter would also present an assessment of embodied carbon for materials to be used in the Scheme.

15.4 Consultation Undertaken and Proposed

15.4.1 To date no consultation has been undertaken to date and no consultation is

proposed.

15.5 Baseline Information

Materials

15.5.1 Information from the Lancashire Minerals and Waste Local Plan area indicates the following availability of aggregate mineral resources:

- Limestone – 1.5 million tonnes (mt) produced in 2012. Reserves of 62.5mt in 2011 to 60.64mt in 2012
- Gritstone – 0.94mt of gritstone produced in 2012. Reserves increased from 66mt to 71.4mt in 2012
- Sand and Gravel – 0.36mt of gritstone produced in 2012. Reserves decreased from 8.6mt in 2011 to 8.36mt in 2012

15.5.2 There is currently no information available relating to the capacity of recycled aggregates. Therefore, it is not possible to quantify how much construction, demolition and excavation waste is re-used as aggregate.

15.5.3 Table 15-2 provides a breakdown of the annual UK demand of key material resources expected to be used by the Scheme.

Table 15-1:Annual UK demand of key material resources

Material resources	Quantities (tonnes)
Aggregates	200,000,000
Pavement	20,000,000
Concrete	52,000,000
Steel	10,700,000

Current local waste arisings

15.5.4 A breakdown of CD&E waste arisings for the Wyre Borough Council and Fylde Borough Council is not available. Instead, data for Lancashire and Great Manchester has been used.

15.5.5 Lancashire and Great Manchester has an estimated total CD&E waste arisings of 6,122,496 tonnes per year (based on 2005 data). Of this total:

- 66% was recycled to produce graded and ungraded aggregates and soil (excluding topsoil) by the regions 69 recycling crushers
- 20% entered licensed landfill sites (of this 43% was used for engineering and capping and 57% was waste)
- 14% was used on exempt sites

Waste capacity

15.5.6 Within the area covered by the Lancashire Joint Plan (2013) there is capacity for the disposal of inert construction, demolition and excavation waste and hazardous waste. Remaining capacity in 2011 is presented in Table 15-3.

Table 15-2: Waste capacity in Lancashire

Waste Type	Capacity (m^3)	Capacity (tonnes)
Hazardous waste	73,000	63,510
Non-Hazardous Waste	8,957,000	7,792,590
Inert Waste	150	188
Total	9,030,150	7,856,288

15.5.7 Total landfill inputs amounted to 900,000 tonnes, continuing a significant trend in the reduced inputs to landfill, which has been relatively consistent across the hazardous, inert and non-inert waste type.

15.5.8 Table 15-4 and Figure 15.1 at Appendix A present a non-exhaustive list of waste management facilities within the study area.

Table 15-3: Waste management facilities

Facility Number	Facility Name	Facility Type	Permitted Tonnage	Facility Postcode
1	Kingscourt Development	A05: Landfill: Non-Biodegradable Wastes	4999	FY6 8JE
2	Kingscourt Development	A11: Household, Commercial & Industrial Waste Transfer Station	79998	FY6 8JE
3	Kingscourt Development	S0810: Inert & Excavation Waste Transfer Station	74999	FY6 8JU
4	Wyre Waste	A11: Household, Commercial & Industrial Waste Transfer Station	155900	FY7 8TW
5	B & M Salvage Fuels Ltd	A09: Special Waste Transfer Station	4000	FY7 6NB

Facility Number	Facility Name	Facility Type	Permitted Tonnage	Facility Postcode
6	Preesall Skip Hire	S0803: HCI Waste Transfer Station + treatment	74999	FY6 0NP
7	Moss Side Landfill Site	A05: Landfill: Non-Biodegradable Wastes	20000	FY6 0JW
8	Iron House Farm	A22: Composting Facility	74999	PR3 6BP
9	Moss Edge Works	A15: Material Recycling Treatment Facility	24999	PR3 6BN
10	Layton Depot	A11: Household, Commercial & Industrial Waste Transfer Station	90000	FY3 7HW

Other Baseline Information to be Obtained

15.5.9 No further baseline is proposed to be obtained.

15.6 Value of Environmental Resources and Receptors

15.6.1 The primary receptor for waste is the available waste management infrastructure within reasonable proximity of the Scheme and the impacts on the capacity of these facilities.

15.6.2 There are no accepted criteria for determining the value (sensitivity) of material resources and waste (including waste infrastructure). In the absence of such guidance, the vales below have been determined by professional judgement. Sensitivity of material resources used is based on the availability of the material resource and whether its use in the Scheme could result in significant depletion. Full details are contained in Table 15-5.

Table 15-4: Determining the Value / Sensitivity of Resource

Value/ sensitivity of receptor	Criteria
Very High	There is no available waste management infrastructure capacity within the study area for any waste arisings from the Scheme. Very high importance and rarity of resource on a national scale. Very limited materials reuse, recycling and or recovery. No capacity of existing highways network to accommodate any increases in lorry movements resulting from the flow of material resources and wastes to and from the Scheme.
High	There is limited waste management infrastructure capacity within the study area in relation to the forecast waste arisings from the Scheme. High importance and rarity of resource on a regional scale. Limited materials reuse, recycling and or recovery. Low capacity of existing highways network to accommodate any increases in lorry movements resulting from the flow of material resources and wastes to and from the Scheme.
Medium	There is adequate waste management infrastructure capacity within the study area for the majority of waste arisings from the Scheme. High or medium importance and rarity of resource on a regional scale. Moderate materials reuse, recycling and or recovery. Medium capacity of existing highways network to accommodate any increases in lorry movements resulting from the flow of material resources and wastes to and from the Scheme.
Low	There is adequate available waste management infrastructure capacity within the study area for all waste arising from the Scheme. Low or medium importance and rarity of resource on a local scale. High materials reuse, recycling and or recovery. High capacity of existing highways network to accommodate any increases in lorry movements resulting from the flow of material resources and wastes to and from the Scheme.
Negligible	Negligible scarcity of required material resource. There is waste management infrastructure capacity within the study area for all waste arisings from the Scheme. Negligible importance and rarity of resource on a local scale. Very high materials reuse, recycling and or recovery. Very high capacity of existing highways network to accommodate any increases in lorry movements resulting from

Value/ sensitivity of receptor	Criteria
	the flow of material resources and wastes to and from the Scheme.

15.7 Potential Effects including Mitigation Measures

Construction Phase

15.7.1 For surplus material resources and waste, the potential environmental effects are associated with the production, movement, transport, processing and disposal of waste from the application site. Effects would include the temporary occupation of waste management facility space (during treatment) and the permanent reduction in landfill capacity (disposal).

15.7.2 By maximising efficiencies, selecting material resources appropriately and managing waste in line with the waste hierarchy, the potential adverse effects of the Scheme with regard to material resources and waste arisings can be minimised.

15.7.3 The transport of material resources and waste would increase the number of journeys on highways networks.

15.7.4 During the options phase slight adverse effects were anticipated for:

- 'Transportation of material resources to site and CD&E waste offsite' as the total number of lorry movements per day required for the Scheme would not affect the capacity on the highways network
- 'Depletion of finite material resources e.g. aggregate for construction' as the Scheme would, where possible, maximise the reuse of site-won materials and procure materials where specification allow with recycled content
- 'Depletion of availability of the waste management infrastructure capacity with the study area' as it is anticipated that the design of the Scheme would result in the excavation of 242,155 tonnes of soil but that all of this would be reused in fill in the Scheme. It is therefore expected that the Scheme design would not produce a surplus of soils as there is a deficit in the cut and fill calculations

Operation

15.7.5 It is anticipated that, during the lifetime of the Scheme, limited amounts of material resources would be required and only minor quantities of operation waste would be produced.

Potential Mitigation Measures

15.7.6 Measures would be implemented to reduce the impacts of material resources use and waste arisings from the Scheme.

15.7.7 A CEMP would be prepared that would require the contractors to:

- Promote opportunities for the potential reusing and recycling of all material resources and waste
- Sort and segregate waste into different waste streams (where technically and economically feasible)

- Manage material use to maximise the environmental and Scheme's benefits from the use of surplus materials

15.7.8 The design would apply the five key principles of waste minimisation (Design for: Reuse and Recovery, Off Site Construction, Materials Optimisation, Waste Efficient Procurement and Deconstruction and Flexibility) in all design phases to support the use of materials in a more efficient manner and to consider how reuse, recycling and recovery of materials can be incorporated into the design and ultimately reduce waste to landfill.

15.7.9 Some of the key aspects of waste minimisation that would be considered during design phases are:

- Designing for site conditions: the design would accommodate strategies to manage particular constraints (e.g. contaminated land) which may impact on waste
- Design complexity: reduce the complexity of the design to standardise the construction process and reduce the quantity of material resources required
- Specifications: avoid over specification and minimise variation in material resources, components and joints; evaluate the reuse and recycling opportunities for the specified material resources before specification

Material Resources

15.7.10 The key Scheme sustainability targets would be embedded within all relevant procurement documentation, along with the methodology for monitoring and reporting.

15.7.11 Contractors would be encouraged to apply good practice to source construction materials from suppliers with responsible sourcing certification (as far as practicable).

15.7.12 All timber procured would be obtained from recycled, reclaimed sources or be accredited to meet sustainable forestry standard such as the Forestry Stewardship Council (FSC). Any remaining timber not sourced through the above would target a known temperate source using the Defra Central Point of Expertise in Timber (CPET).

15.7.13 The depletion of finite material resources would occur through extraction of primary aggregates (e.g. sands and gravels). Structures, drainage and signage products would be procured with consideration of the environmental impacts associated with their manufacture, as well as other considerations such as structural design, carbon footprint, energy consumption, long-life performance, visual impacts, durability and cost.

15.7.14 The procurement process shall ensure that materials are ordered so that the timing of the delivery (e.g. 'just in time' deliveries), the quantity delivered and the storage are optimised to reduce opportunity for oversupply and damage onsite.

15.7.15 It is anticipated that, wherever possible and where specification allows, construction material resources would include a measurable recycled content in their manufacture.

15.7.16 Materials would be ordered, where possible, in sizes to prevent wastage e.g. in the

form of off cuts and waste to be able to be returned to the original supplier (e.g. plastic pipe).

15.7.17 Materials would be stored to minimise the potential of damage or wastage. Measures would include off-ground storage e.g. on pallets, remaining in original packaging, protection from rain or collision by plant or vehicles. The materials storage area would be secured during out of hours to prevent unauthorised access.

15.7.18 Consideration of the durability of the materials to be utilised by the Scheme would be provided at a detailed design stage.

15.7.19 Wherever possible, standardisation of material resources and building elements would be incorporated into the Scheme's design in order to minimise required material resources and the production of waste. For example, the use of prefabricated components.

15.7.20 Where possible, consideration would be given to the reuse of material (e.g. uncontaminated soils) back into the Scheme. However, the proposed Scheme would require specific material resources to be imported to the application site (e.g. additional bulk fill materials). Some demolition materials would be retained / reused onsite (e.g. elements of the drainage would be retained and utilised within the current design where feasible). Maximisation of reuse of site-won materials would be secured through the development and implementation of a MMP.

15.7.21 Agreements would be explored with suppliers to reduce the amount of packaging used to protect materials or to participate in a packaging take back scheme.

Waste

15.7.22 The CEMP would contain the measures the contractor would implement during construction including those detailed below.

15.7.23 Excavated material would be targeted for fill and landscaping where this is feasible and the material is suitable. Excavated materials, such as soils, would be carefully stored in segregated piles for subsequent reuse on the application site, where possible. If the material is contaminated then it would be kept separate from clean material and sent for either treatment, recycling or recovery, where appropriate, or disposal at appropriately permitted facilities.

15.7.24 Surplus inert excavated materials (e.g. soils, stone, bricks, clay, rubble, rock) may be suitable for use in land reclamation schemes. This would require compliance with the criteria and thresholds for an exemption or a permit under the Environmental Permitting Regulations 2010 (as amended) (The Stationery Office, 2010). The CL:AIRE Protocol (CL:AIRE, 2011) may also be applicable for the reuse of this material.

15.7.25 Materials unsuitable for use onsite (e.g. timber off cuts that cannot be used onsite) would be collected for subsequent separation and considered for recycling at an off-site waste management facility.

15.7.26 Any material produced by the enabling works (e.g. good quality topsoil) deemed acceptable, would be stored and re-laid within the application site whenever possible.

Hazardous waste

15.7.27 Hazardous wastes, including any contaminated soil would be identified, removed and kept separate from other CD&E wastes in order to avoid contaminating 'clean' materials.

Site practices

15.7.28 The Scheme would have a Waste Manager or Champion who would oversee the implementation of the waste control strategy and the handling of any waste material.

15.7.29 A waste management compound would be established within the application site to handle incoming waste from construction activities. These would be designed to facilitate the segregation of key waste streams to maximise the opportunity to reuse, recycle and return wastes generated onsite.

15.7.30 An area would be established for spoil classification at the application site. Spoil would be inspected, tested (as necessary) and assessed as suitable for removal or remediation prior to removal from the application site. Material in this area would be stockpiled by type and disposal method.

15.7.31 C&D work would be carried out closely with the waste management contractors, in order to determine the best techniques for managing waste and ensure a high level of recovery of materials for recycling.

15.7.32 For all waste management options on the site compounds, consideration would need to be given for identifying whether waste exemptions or permits are required to enable for the storage and treatment of waste materials.

15.7.33 Waste management options would be supported by the identification of appropriately permitted waste management and recycling facilities in close proximity to the site compounds.

Transport of material resources and waste

15.7.34 A Traffic Management Plan would be implemented by the contractors to minimise transport movements.

Operation material resources and waste

15.7.35 It is anticipated that only minor quantities of operation waste would be produced during the lifetime of the Scheme, therefore no additional measures are envisaged to be put in place.

15.8 Proposed Level and Scope of Assessment

15.8.1 No significant effects are anticipated as a result of this topic. It is therefore proposed that information regarding waste and materials during construction would be included within the Scheme Description of the ES. This text would include how waste would be managed through the design process and specialists would assess this information within topic specific chapters.

15.8.2 In addition, it is anticipated that only minor quantities of operation waste would be produced during the lifetime of the Scheme therefore it is proposed that this is scoped out of the assessment.

15.9 Assumptions and Limitations

15.9.1 No specific assumptions or limitations have been identified at this stage.

16 CLIMATE

16.1 Introduction

16.1.1 This chapter details the proposed scope of work for the assessment of the Scheme's potential effects on climate during both construction and operational phases. Climate change has been divided into the following two subsections:

- Climate change adaptation – Describes the vulnerability of the Scheme to climate change in the North West and how climate change would potentially manifest itself in the future
- Greenhouse Gas Emissions (GHG) – Describes how the Scheme would impact the climate in relation to greenhouse gas emissions

16.1.2 There are linkages between the assessment of potential effects on climate change and other disciplines, notably:

- Chapter 7: Air Quality
- Chapter 9: Biodiversity
- Chapter 10: Landscape
- Chapter 12: People and Communities
- Chapter 13: Road Drainage and the Water Environment
- Chapter 14: Geology and Contaminated Land

16.2 Study Area

16.2.1 In relation to climate change adaptation, the study area would comprise the North West of England.

16.2.2 In relation to climate change mitigation, the study area would comprise the application boundary and the traffic model area that would be used to assess greenhouse gas emissions and would inform the appraisal of the traffic, air quality and noise effects of the Scheme.

16.3 NN NPS Requirements

16.3.1 The NN NPS requires that:

- The Applicant should consider the effects of climate change when planning location, design, build and operation of transport infrastructure. The supporting environment statement should detail how the proposal would take into account the projected impacts of climate change
- The Applicant should consider the potential impacts of climate change using the latest UK Climate Projections available at the time and ensure any environmental statement identifies appropriate mitigation or adaptation measures. In cases where transport infrastructure contains safety-critical elements and the design life of the asset is greater than 60 years, the applicant should use the UK Climate Projections 2009 (UKCP09) high emissions scenario (high impact, low likelihood) against the 2080 projections at the 50% probability level
- The assessment should cover the estimated lifetime of the new infrastructure and

in the case where a new set of UK Climate Projections are available after the preparation of an environment statement, the Examining Authority should consider whether additional information would be required from the applicant

- The Applicant should also assess if there are any critical features related to the design of new infrastructure which could be significantly affected by more extreme climate changes beyond the latest set of UK climate projections. Any potential critical features should be assessed using the latest credible scientific evidence and potential mitigation and adaptation measures should be considered
- The Applicant should base adaptation measures on the latest set of UK Climate Projections, the Government's national Climate Change Risk Assessment and consultation with statutory consultation bodies. All adaptation measures must be assessed as part of any environmental impact assessment and included in the environment statement, which should set out how and where such measures are proposed to be secured
- The SoS should consider if adaptation measures themselves could potentially result in consequential impacts. The potential impacts should be considered in relation to the application as a whole and the impacts guidance set out in the NN NPS
- The Applicant should produce evidence of the carbon impact of the project and an assessment against the UK Government's carbon budgets. Evidence of appropriate mitigation measures in both design and construction should be presented
- The SoS will consider the effectiveness of mitigation measures in relation to design and construction, to ensure that the carbon footprint is not unnecessarily high

16.3.2 The delivery of adaptation and mitigation measures set out in Section 16.7 of this Chapter would support adherence to the requirements of the NN NPS.

16.4 Consultation Undertaken and Proposed

16.4.1 No consultations have been undertaken to date. Table 16-1 outlines the consultations that would be undertaken during the assessment.

Table 16-1 Details of proposed consultations

Consultations Proposed	Information to be Obtained
Environment Officer – Wyre Borough Council, Fylde Borough Council and Blackpool Council	To consult on climate change targets, aims, commitments, other projects, plans and policy that affect climate and baseline data To consult on any future developments, including transport infrastructure projects in close proximity to the Scheme
Environment Officer - Lancashire County Council	
Environment Officer - Environment Agency (EA) (North West Region)	

16.5 Baseline Information

Baseline Information Obtained/Surveys Undertaken

16.5.1 Across England as a whole, land temperature in the decade 2005 - 2014 was 1°C warmer than 1961-1990. There has been a significant human influence on the observed warming in annual Central England Temperature since 1950. Statistical results from extreme value analysis suggest that the UK daily maximum and minimum temperature extremes have increased by just over 1°C since the 1950s, and that heavy seasonal and annual rainfall events have also increased.

16.5.2 There has been a small observed increase in annual mean rainfall in recent decades. Between 1961 1990 and 1981-2010 annual mean rainfall increased by 3.2%. However, this change is not statistically significant in the context of rainfall totals over the last century.

16.5.3 It is predicted that climate change will increase the frequency and severity of some types of extreme weather events in England. UK CP09 generally show that warmer, drier summers are more likely along with warmer, wetter winters. The projections for the North West in the 2020s under a high emissions scenario suggest a central estimate of:

- An increase in winter mean temperature of 1.2ºC
- An increase in summer mean temperature is 1.5ºC
- An increase in summer mean daily maximum temperature is 1.9ºC
- An increase in summer mean daily minimum temperature is 1.4ºC
- No change in annual mean precipitation
- A 4% increase in winter mean precipitation
- A 5% decrease in summer mean precipitation

16.5.4 By the 2050s, the high emission central estimate provides the following projection:

- An increase in winter mean temperature of 2.1ºC
- An increase in summer mean temperature is 3ºC
- An increase in summer mean daily maximum temperature is 3.8ºC
- An increase in summer mean daily minimum temperature is 2.9ºC
- No change in annual mean precipitation
- A 13% increase in winter mean precipitation
- A 18% decrease change in summer mean precipitation

16.5.5 Across UK, the total GHG emissions from transport in UK are presented in Table 16-2. These figures are by source, which means that they include direct emissions and do not include emissions resulting from the production of the fuels used.

Table 16-2: Total GHG from domestic transport in UK

Year	Tonnes of CO_2e
2010	120,100,000
2011	118,300,000
2012	117,700,000
2013	116,500,000
2014	117,800,000
2015	120,000,000

Other Baseline Information to be Obtained

16.5.6 A review of recent relevant past extreme weather events in the study area and their direct and indirect impacts on the road infrastructure would be conducted using the UK CP09 weather generator data.

16.5.7 This review of recent events would allow the Scheme's potential vulnerability to climate change and future extreme weather events to be better understood. A better understanding of the consequences of weather events would provide a starting point for raising awareness of the risks and initiating a more considered approach to dealing with weather and climate impacts.

16.5.8 Baseline conditions for GHG would also be established through a desktop research by calculating what carbon emissions would have been in the absence of the Scheme and the planned measures aiming to reduce GHG emissions.

16.6 Value of Environmental Resources and Receptors

16.6.1 As part of the approach to climate the vulnerability of the scheme to climate change would be considered and this would then inform the development of the Scheme. This may well require the incorporation of measures into the Scheme to ensure its future resilience to climate change. That design would then be assessed by other topics to understand how that design would influence other receptors; the value of which would be presented in other chapters (e.g. Chapter 7: Air Quality, Chapter 8: Cultural Heritage, Chapter 9: Biodiversity, Chapter 10: Landscape, Chapter 12: People and Communities, Chapter 13: Road Drainage and the Water Environment and Chapter 14: Geology and Contaminated Land).

16.7 Potential Effects Including Mitigation Measures

16.7.1 This section outlines the potential effects of the scheme during construction and operation from a climate change adaptation and greenhouse gas emissions perspective:

Climate Change Adaptation - Construction

16.7.2 During construction, drought, high rainfall intensities and high winds could give rise to an increased risk of dust or water pollution, damage the landscape planting design and rise the earthworks above predicted flood level.

Climate Change Adaptation - Operation

16.7.3 Climate change is projected to increase peak rainfall intensity, and thus increase

highway runoff rates and volumes. Flooding in watercourses are similarly expected to increase; therefore scour, bank erosion and exceedance of design rates for bridges and culverts would be more likely in the future.

16.7.4 An increase in climatic variability could lead to higher groundwater levels and more saturated soils, but also increased risk of extreme drought. Both mechanisms can affect ground stability in locations on vulnerable soils. Low to high emissions scenarios could lead to soil moisture fluctuations and therefore, increased risk of shrink-swell related failures.

16.7.5 Vegetation stress due to drought conditions could be a risk to the Scheme depending on the width of soft estate, steepened slopes and potential damage to root systems. Adding in the effect of increased wind velocities due to climate change, it is feasible that increasing loss/damage to trees could occur.

16.7.6 Table 16-3 presents the primary weather events currently affecting the study area and provides a high-level overview of the types of potential effects.

Table 16-3: Summary of primary weather events and types of potential effects

Primary Weather Event	Potential Effect
Heavy rain /flooding	Raised river levels, flooded drains, collapsed culverts Road closures Disruption to train services (e.g. trains cancelled or non-stopping at certain stations) Contaminated water
High winds	Damage structures Power cuts Fallen trees Road closure
Heat wave	Health impacts from breathing problems and sunstroke Impact to biodiversity (e.g. loss of fish) Grass and forest fires Structural damage
Lightening	Structural damage Power surge and tripping electricity breakers Fires Health impacts from direct strikes
Snow and Ice	Dangerous driving conditions Damage to roads Health impacts from slipping on ice and chest illnesses
Fog	Dangerous driving conditions

Greenhouse Gas Emissions - Construction

16.7.7 In order to construct the Scheme, a large amount of natural resources (i.e. materials and energy) would be required, which would contribute towards GHG emissions and therefore climate change.

16.7.8 The construction phase of the Scheme would also have the potential to increase GHG emissions due to:

- Emissions from construction plant onsite
- Emissions from water consumption
- Exhaust emissions from construction phase road traffic

16.7.9 It is estimated that additional vehicle movements and emissions, within the study area, associated with the construction of the Scheme would be a very small percentage of the total emissions within the study area, thus would have a negligible effect on regional climate change.

Greenhouse Gas Emissions - Operation

16.7.10 As a result of the operation of the Scheme GHG emissions would mainly result from vehicular movements with other emissions, e.g. due to maintenance likely to be minimal.

Potential Mitigation Measures – Climate Change Adaptation and GHG Emissions

Construction and Operation

16.7.11 The Scheme would adhere to the EA's guidance on allowances for rainfall and flood probability due to climate change, within the context of flood risk assessments.

16.7.12 The Contractor would ensure appropriate measures within the CEMP are implemented and, as appropriate, additional measures to ensure the resilience of the proposed mitigation of impacts during extreme weather events. For example, avoidance of storing construction materials in floodplains and dampening of soils and stockpiles.

16.7.13 Water use during construction would be minimised and the reuse would be encouraged. Any water abstraction required for construction would be coordinated with the needs of local community.

16.7.14 As the Scheme would be open to traffic in 2022, the potential for existing weather conditions to materially change such that the basis of the EIA becomes insecure is remote. The principal aspect for which climate change is most important is that of flood risk particularly as it affects road safety. The current 20% uplift in attenuation capacity is supported by a test providing for a 40% uplift within certain regions in line with the EA guidance. Where uplift is considered necessary then the Scheme would be designed to cope with the increase in rainfall.

16.7.15 As the Scheme's soft estate would be a stressful location for trees, species would be selected that can withstand such conditions. Adaptive measures would also include the selection of drought tolerant species. As a consequence, it is considered that they would be able to accommodate climate change.

16.7.16 The presence of noxious weeds, if any, would be controlled by an appropriate

management regime during both construction and operation.

16.7.17 Appropriate water drainage, considering capacity, would be incorporated within the design of the Scheme.

16.7.18 Whilst climate change has the potential to bring about changes in the groundwater regime (for example groundwater depths and gradients), there is insufficiently detailed evidence to predict with certainty the impact that climate change would have on the assessment and remediation of contaminated land. Therefore, it is not considered feasible to predict climate change mitigation measures at this stage. However, the detailed assessment of contamination and the detailed design of remediation would consider potential changes in the groundwater regimes, and other potential impacts, to ensure that remediation designs are resilient.

16.7.19 Allowances for increased river flows due to climate change would be incorporated in design of elements, such as a bridge.

16.7.20 The Scheme's design would ensure that flow paths are not obstructed by including conveyance in structures such as culverts in embankments.

16.7.21 Good practice in soil handling guidelines would be implemented. The creation of suitable well drained landforms in reinstated areas would be an option; together with the installation of field drains, as necessary.

16.8 Proposed Level and Scope of Assessment

16.8.1 The Scheme's related impacts on the receptors would be measured on a spatial and temporal basis, and would be numerically quantified or employ a qualitative judgement.

Climate Change Adaptation

16.8.2 The vulnerability of the Scheme to climate change and incorporation of appropriate adaptation measures into the Scheme design would be part of the iterative design process. A risk assessment would be undertaken in conjunction with the design team and the details of this risk assessment would be reflected in the scheme description that would be subsequently assessed in other environmental topic chapters.

Greenhouse Gasses Emissions

16.8.3 The assessment undertaken to inform this Scoping Report has consisted of qualitative desk study using readily available published data. More detailed, site-specific quantitative assessments would be undertaken as part of the EIA.

16.8.4 The usual scope of the GHG assessment is summarised in Table 16-3 and is consistent with the principles set out in PAS 2080:2016.

Table 16-4: Scope of GHG emissions assessment broken down by Life Cycle (LC) stages

LC Stage	Description
Construction	
Transport	Represents transport related GHG emissions associated with the delivery of construction material, such as concrete and

LC Stage	Description
	steel, and construction equipment to construction sites along the Scheme from the point of production (or point of storage in the case of plant and machinery).
Onsite operations	Represents GHG emissions from construction activities including: Temporary works, ground works, and landscaping Materials storage and any energy Transport of materials and equipment onsite Installation of materials and products Emissions associated with site water demand Carbon sequestration from tree planting Waste management activities (transport, processing, final disposal) associated with waste arising from the Scheme GHG implications associated with land use change
Maintenance, repair, replacement and refurbishment	Represents the GHG emissions resulting from activities of works and new materials for the maintenance, repair, replacement and refurbishment of the Scheme during the operation.
Operation	
Energy	Represents the GHG emissions resulting from the energy used by the Scheme's infrastructure, minus any electricity generated through onsite low carbon energy sources not exported to the grid.
Water	Represents the GHG emissions resulting from the provision of water required by the Scheme to enable it to operate and deliver its service. For example, this includes water used in the maintenance and cleaning.
Other operational processes	Represents other process GHG emissions arising from the Scheme to enable it to operate and deliver its service including management of operational waste
Users utilisation	Represents the GHG emissions associated with the operation of the Scheme.
Post-operation	
End of life	Represents the GHG emissions resulting from activities of deconstructing, demolishing and decommissioning the Scheme. Essentially these are onsite GHG emissions from plant equipment. It also represents the activities associated with transport, waste management and final disposal of materials associated with the Scheme.

16.8.5 As detailed above, the GHG emissions assessment would be based on a LC approach. Best practice criteria, based on professional knowledge and the predicted low GHG emissions, for the exclusion of inputs and outputs (cut-off rules) of the scope has be applied. The scope of the Scheme's GHG emissions assessment is outlined in Table 16-5 below.

Table 16-5: Scope of Scheme's GHG Assessment

LC Stage	Included	Excluded
Construction	Transport of construction materials from the factory gate to the construction site Construction processes	Product manufacturing Preliminary desk-based studies Transport of construction plant equipment to and from site
Operation	Carbon sequestration from tree planting Operation of the Scheme Maintenance, repair, replacement and refurbishment	Operational water use Other operational processes.
Post-operation	N/A	End of life deconstruction, demolishing and decommissioning, transport and waste processing and disposal

16.9 Proposed Methodology Including Significance

Guidance

16.9.1 The overarching policy in relation to climate change is the Climate Change Act 2008. The Act sets up a framework for the UK to achieve long-term goals of decreasing GHG emissions by 34% compared to the 1990 baseline by 2020 and by 80% by 2050 and to ensure steps are taken towards adapting to the impact of climate change. The Act introduces a system of carbon budgeting which constrains the total amount of emissions in a specific time period, and establishes a procedure for assessing the risks of the impact of climate change for the UK.

16.9.2 In addition to the above Act, reference would be made to the following national, regional and local guidance and legislation relating to climate change:

- Highways England (2016) Climate Adaptation Risk Assessment Progress Update
- The Green Construction Board (2016) PAS 2080:2016 Carbon Management in Infrastructure
- DfT (2016) WebTAG (the Transport Analysis Guidance – Data Book)
- Defra (2017) The UK Climate Change Risk Assessment
- The Department of Energy and Climate Change (2011) The Carbon Plan: Delivering our Low Carbon Future

Proposed Assessment Methodology – Climate Change Adaptation

16.9.3 Workshops would be held with the designers and the other environmental topic specialists to complete a risk assessment to understand the vulnerability of the Scheme to climate change.

16.9.4 The risk assessment would be used to inform the evolution of the Scheme design during all phases.

16.9.5 This design would then be assessed in the ES and each topic chapter would consider the potential effects of the measures that have been incorporated into the Scheme from an adaptation perspective.

16.9.6 Table 16-6 presents some examples of the adaptation measures that may need to be incorporated into the Scheme design.

Table 16-6: Example table to demonstrate summary of effects and mitigation measures by ES topic

Aspect	Effect (construction (C) and operation (O))	Adaptation / Mitigation Measures	Relevant ES Topic
Increased wind / gusting of X mph	Wind damage to planting (O)	Consideration of wind damage in landscape planting design	Landscape (planting mix) Biodiversity (e.g. due to requirement for different species mix)
Increased wind / gusting of X mph	Damage to structures plus health and safety risk (C, O)	Designing structures for extreme wind events	Larger structures with increased material usage, landtake / ecological effect and visual impact
Increased wind / gusting of X mph	Dust raising (C)	CEMP requirements to include mitigation	Air Quality Biodiversity
Increased precipitation of X mm in winter	Increased flooding (C, O)	Raising of earthworks above predicted flood level	Air Quality Biodiversity People and Communities (e.g. landtake)
Increased temperature of X degs in summer	Damage to / failure of planting (O, M)	Choice of planting. Maintenance regime	Air Quality Biodiversity

Proposed Assessment Methodology – GHG Emissions

16.9.7 Both construction and operational phases of the Scheme would be considered for the GHG assessment. This would be based on the full operation of the Scheme in 2022 and the anticipated construction period of two years commencing in March

2020.

16.9.8 The GHG emissions assessment would take an approach consistent with the principles set out in PAS 2080:2016. The GHG emissions associated with the construction and operation of the Scheme would be reported in the form of the 'carbon footprint' - reported in tonnes of carbon dioxide equivalent (tCO_2e).

16.9.9 Direct and indirect emissions would be considered in line with GHG reporting and the total carbon footprint that would be reported in CO_2 equivalents (CO_2e). This would allow for the emissions of the six key GHG: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6); to be expressed in terms of their equivalent global warming potential in mass of CO_2e.

16.9.10 The assessment would report the carbon footprint from the construction phase and for the operational design life of the Scheme. Transport related GHG emissions would be calculated using WebTAG. In addition, the assessment would be carried out for the following time periods:2020 – start of construction:

- 2022 – proposed Scheme's opening
- 2062 - 40 years of operation after opening

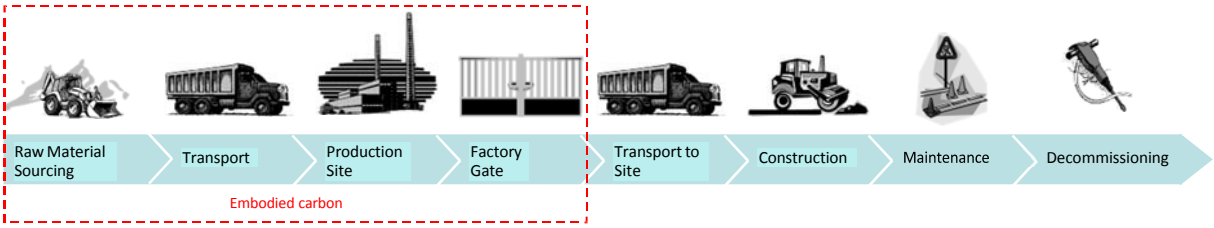
Proposed Assessment Methodology – GHG Emissions - Construction

16.9.11 While international standards and guidance documents exist for compiling GHG Inventories, there are currently no accepted criteria for quantifying the GHG emissions of construction activities. In the absence of such guidance, the assessment would be undertaken using professional judgement and utilising the HE Carbon Tool, Project's Bill of Quantities and Bath University's Inventory of Carbon and Energy (ICE) Database.

16.9.12 The HE Carbon Tool model would be used to calculate the carbon footprint associated with construction of the Scheme as it is based on the widely-used GHG Protocol. The HE Carbon Tool contains carbon factors related to the types of materials commonly used in highway construction.

16.9.13 The HE Carbon Tool measures the GHG impacts of construction activities in terms of carbon dioxide equivalent emissions (CO_2e). It does this by calculating the embodied CO_2e of materials and the associated emissions of their transport. Plate 16-1 below represents how the embodied CO_2e of materials would be calculated.

Plate 16-1: Diagrammatic representation of the measure of embodied carbon in relation to material LC



16.9.14 In addition to the calculation of embodied emissions of materials, the emissions of construction activities would also be considered. This would include emissions associated with waste arisings, water use, transportation of waste arisings,

construction site energy for the duration of the construction period, workers commute and land use change.

16.9.15 The construction related emissions would be based on the construction and logistics information for the Scheme. This would include information relating to specific design elements (e.g. bridges) across the entire Scheme in terms of:

- Volume (m^3) of material resources
- Type of material resources (e.g. concrete)
- Transport distances (km) of material resources
- Volume (m^3) of waste generated (both construction and demolition)
- GHG emissions coefficients
- Overall carbon emissions of each design element
- Functional units (e.g. tonnes of carbon dioxide CO_2e per metre and year of design element) if available

16.9.16 The excavation and movement of excavated materials along the Scheme would be modelled separately. This assessment would provide volumes of materials reused onsite along with distances travelled and modes of transport.

Proposed Assessment Methodology – GHG Emissions - Operation

16.9.17 Transport related GHG emissions would be calculated using WebTAG.

16.9.18 Carbon sequestration from tree planting would also be calculated in CO_2e.

Significance Criteria - Climate Change Adaptation and GHG Emissions

16.9.19 As noted above, appropriate adaptation measures would be incorporated into the Scheme design during both construction and operation to reduce the vulnerability of the Scheme to climate change. These measures would be incorporated into the Scheme design and then assessed as required in other relevant environmental topic chapters. The risk assessment undertaken to understand the Schemes' vulnerability to climate change would be reported in the climate chapter. Therefore, there are no specific significance criteria for the assessment of climate change adaptation effects.

16.9.20 With regards to GHG emissions there are no recognised significance criteria and the information presented would demonstrate the levels of emissions predicted during construction and operation.

16.10 Assumptions and Limitations

16.10.1 The climate assessment is inherently uncertain in relation to climate change projections and the variation of information availability in relation to different climate hazards.

16.10.2 The climate change mitigation assessment would be based on a number of assumptions. For example, construction site carbon emissions relating to fuel and energy use would consider carbon emissions associated with machinery and plant used.

16.10.3 A series of alternative future scenarios would be assessed in order to illustrate the

sensitivity of the Scheme's carbon footprint to key assumptions; this assessment would be set out in the ES.

17 CUMULATIVE EFFECTS

17.1 Introduction

17.1.1 This chapter sets out the scope of the CEA that would be completed as part of the EIA. The CEA would be undertaken following the guidance in PINS Advice Note 17: Cumulative Effects Assessment. The CEA would identify where two or more sources of effects interact to give rise to impacts on environmental resources or receptors. Two types of cumulative effects would be considered:

- Intra-Scheme Effects – The combined action of a number of different environmental topic specific effects upon a single resource/receptor
- Inter-Scheme Effects – The combined action of a number of different projects, in combination with the project being assessed, on a single resource/receptor

17.2 Method

Intra-Scheme Cumulative Effects

17.2.1 Intra-Scheme effects would be presented for receptors which could be affected by more than one ES topic. Where a receptor has been identified as only experiencing one effect or where only one topic has identified effects on that receptor there is no potential for intra- scheme effects to occur.

17.2.2 Intra-Scheme cumulative effects would therefore only be identified where more than one ES chapter has identified a residual effect on an individual or group of receptors.

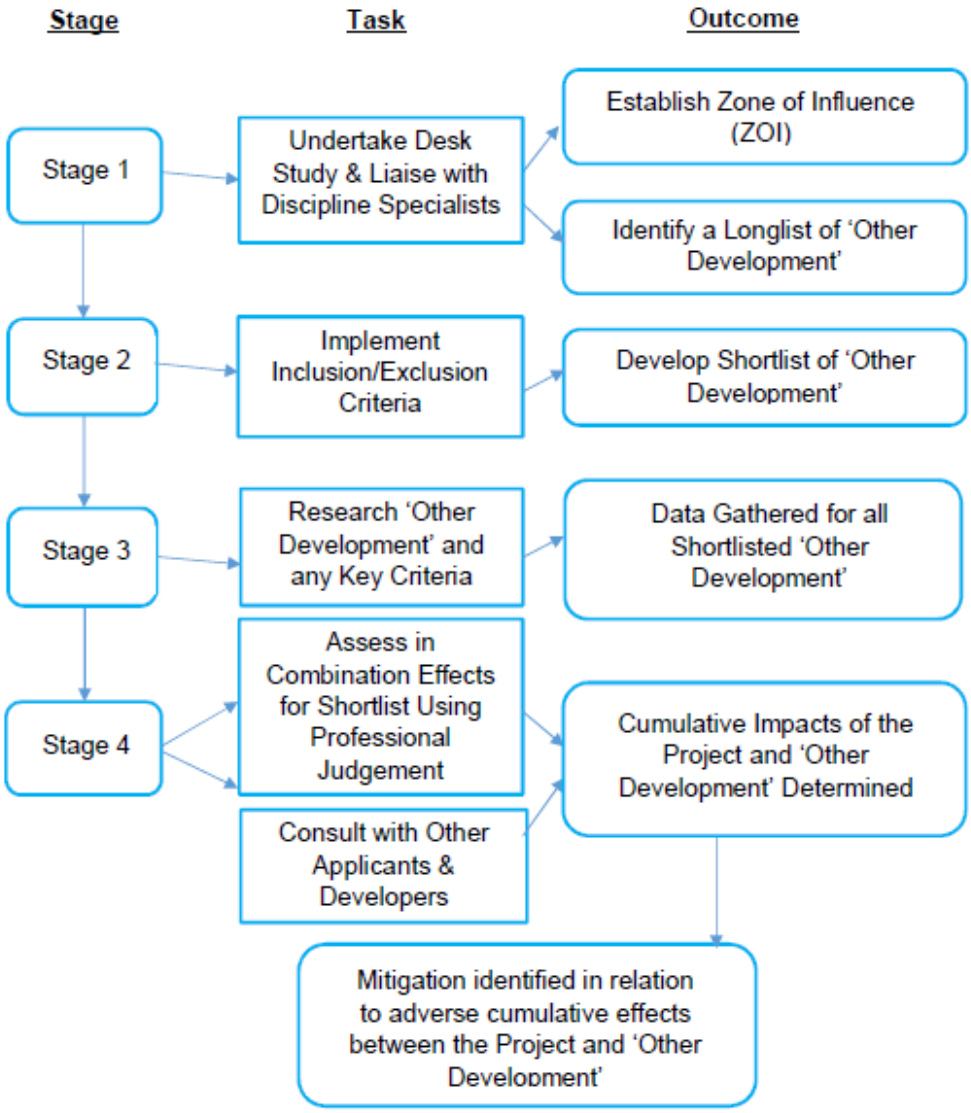
17.2.3 The results would be presented within the ES in a CEA chapter within a table.

Inter-Scheme Cumulative Effects

17.2.4 Inter-scheme effects arising from the Scheme in combination with 'other development' schemes during the construction and operation phases would be assessed.

17.2.5 The EIA Regulations (2017), require an assessment of potentially significant cumulative effects of a scheme along with 'other developments'. There are no legislative or policy requirements which set out how a CEA should be undertaken. However, PINS have issued an Advice Note which sets out the staged approach that applicants are encouraged to adopt in CEA for NSIPs. The Advice Note suggests a process, involving four 'Stages'. These four 'Stages' are outlined below in Plate 17-1 and explained in detail further below.

Plate 17-1: Flow diagram showing the critical processes involved in the CEA



17.2.6 Stage 1 of the process involves establishing an appropriate 'Zone of Influence' (ZOI) to help identify 'other development' relevant to the CEA. Through liaison with technical specialists for each individual ES topic, ZOIs have been established using professional judgement. The resultant ZOI determined for each topic is presented in Table 17.1.

17.2.7 A 1km ZOI addresses localised cumulative effects from topic areas, meanwhile a larger ZOI addresses the potential for cumulative effects associated with air quality and noise and vibration.

Table 17-1: The Established ZOIs for Environmental Topics.

Environmental Topic	Zone of Influence
Air Quality	Refer to Plate 2-1.
Cultural Heritage	1km
Landscape	1km
Biodiversity	2km
Geology and Contaminated Land	1km
Noise and Vibration	Refer to Plate 2-1.
People and Communities	500m
Road Drainage and the Water Environment	500m
Climate	Refer to Plate 2-1.
Health	As per Air Quality, Noise and Vibration, Road Drainage and the Water Environment and People and Communities.

17.2.8 Following the establishment of the ZOIs for each topic, a desk study was undertaken to search for 'other developments'. This used the largest ZOI as the maximum extent of the study area in which the 'other development' was searched for to create a 'long list'. The desk study was undertaken to obtain all available information about the 'other development'.

17.2.9 A tiered approach was applied to consider the level of certainty of 'other development' being carried out that falls within the ZOI.

17.2.10 The tiers assigned were as follows:

- Tier 1 (a): Under construction
- Tier 1 (b): permitted application(s), whether under the PA2008 or other regimes, but not yet implemented
- Tier 1 (c): submitted application(s) whether under the PA2008 or other regimes but not yet determined
- Tier 2: schemes on the Planning Inspectorate's Programme of Projects where a scoping report has been submitted
- Tier 3 (a): scheme on the Planning Inspectorate's Programme of Projects where a scoping report has not been submitted
- Tier 3 (b): identified in the relevant Development Plan (and emerging Development Plans - with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals would be limited

- Tier 3 (c): identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward

17.2.11 A process of shortlisting was then undertaken regarding planning applications, relevant development plans and other relevant sources, to identify which developments within the ZOIs fall within the 'other developments' that are relevant to the assessment of potential cumulative effects.

17.2.12 The resulting list is presented in Table D1 at Appendix D. These 'other developments' are also mapped on Figure 17.1 within Appendix A. This list and map reflects the temporal scope and scale and nature of the 'other development', in line with Stage 2 of the Advice Note.

17.2.13 Following agreement from PINS and statutory consultees, more detailed information would be gathered for the ES as part of Stage 3 on the 'other developments' before proceeding to Stage 4.

17.2.14 Stage 4 would then be undertaken.

17.2.15 'Other development' identified would be reviewed periodically to ensure that the most up to date information is used at key points during the evolution of the ES. This includes reviewing the status of 'other development' and any new applications which may be registered within the ZOI.

18 PROPOSED STRUCTURE OF THE ES

18.1.1 The ES would comprise three volumes:

- Volume 1A – Main Environmental Statement Text
- Volume 1B – Environmental Statement Figures
- Volume 2 – Environmental Statement Appendices

18.1.2 A Non-Technical Summary would also be produced.

18.1.3 The ES would reflect the new requirements of the EIA Directive 2014/52/EU transposed into UK Regulations in May 2017.

18.1.4 Volume 1A of the ES is currently anticipated to be structured as below – subject to further discussion with the Statutory Environmental Bodies (SEBs):

- Introduction
- Description of the Scheme
- Alternative Assessment
- Consultation
- EIA Methodology
- Air Quality (the structure of the air quality chapter would be replicated for other assessment chapters)
  - Introduction
  - Regulatory Framework / NN NPS requirements
  - Methodology
  - Existing and future baseline
  - Receptors potentially affected (including value / sensitivity)
  - Mitigation, enhancement measures and monitoring (note that only mitigation measures that can be secured appropriately would be used in the assessment)
  - Residual Effects
  - Summary
- Cultural Heritage
- Biodiversity
- Landscape
- People and Communities
- Noise and Vibration
- Road Drainage and the Water Environment – this would be supported by a Flood Risk Assessment
- Geology and Contaminated Land

- Climate
- Cumulative Effects

18.1.5 A number of plans would be produced that would support the preparation of the ES and the results presented therein and would also be a mechanism for securing the required mitigation. These are likely to include:

- A CEMP including a Pollution Prevention Plan
- Environmental Masterplan

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20 ABBREVIATIONS / GLOSSARY

Abbreviation	Definition
AADT	Annual Average Daily Traffic
ADMS	Atmospheric Dispersion Modelling System
AEP	Annual Exceedance Probability
ALC	Agricultural Land Classification
AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
AQS	Air Quality Strategy
AQSO	Air Quality Strategy Objectives
ARN	Affected Road Network
BAP	Biodiversity Action Plan
BHS	Biological Heritage Site
BMLV	Best and Most Versatile Land Value
BNL	Basic Noise Level
BPM	Best Practicable Means
BS	British Standard
CEA	Cumulative Effects Assessment
CEMP	Construction Environmental Management Plan
Ch	Chainage
CIEEM	Chartered Institute of Ecology and Environmental Management
CIRIA	Construction Industry Research Information Association
CL:AIRE	Contaminated Land: Applications in Real Environments
CO_2	Carbon Dioxide
CPET	Central Point of Expertise in Timber
CRTN	Calculation of Road Traffic Noise
DBA	Desk-Based Assessment
DCO	Development Consent Order
Defra	Department for Environment Food & Rural Affairs
DfT	Department for Transport

Abbreviation	Definition
DMRB	Design Manual for Roads and Bridges
EA	Environment Agency
EAR	Environmental Assessment Report
EcIA	Ecological Impact Assessment
ECoW	Ecological Clerk of Works
EDIT	Equality, Diversity and Inclusion sifting Tool
EEA	European Economic Area
EFT	Emission Factor Toolkit
EIA	Environment Impact Assessment
END	Environmental Noise Directive
EqIA	Equalities Impact Assessment
ES	Environmental Statement
EU	European Union
FRA	Flood Risk Assessment
FSC	Forestry Stewardship
ha	Hectare (Unit of Measurement)
GHG	Greenhouse Gas
HAWRAT	Highways Agency Water Risk Assessment Tool
HDV	Heavy Duty Vehicle
HER	Historic Environment Record
HGV	Heavy Goods Vehicle
HRA	Habitat Regulations Assessment
IAN	Interim Advice Note
IAQM	Institute of Air Quality Management
JNCC	Joint Nature Conservation Committee
km	Kilometre (Unit of Measurement)
LAQM	Local Air Quality Management
LC	Life Cycle
LCA	Landscape Character Assessment
LFRMS	Local Flood Risk Management Strategy
LiDAR	Light Detection and Ranging
LLFA	Lead Local Flood Authority

Abbreviation	Definition
LOAEL	Lowest Observed Adverse Effect Level
LV	Limit Values
MAGIC	Multi-Agency Geographic Information for The Countryside
MMP	Materials Management Plan
NCA	National Character Areas
NERC	National Environment Research Council
NEWP	Natural Environment White Paper
NIA	Noise Important Area
NMUs	Non-Motorised Users
NN NPS	National Policy Statement for National Networks
NO_2	Nitrogen Dioxide
NOEL	No Observed Effect Level
NOx	Oxides of Nitrogen
NPPF	National Planning Policy Framework
NPSE	Noise Policy Statement for England
NSIP(s)	Nationally Significant Infrastructure Project(s)
NTEM	National Trip End Model
NTM	National Transport Model
PCM	Pollution Climate Mapping
PCF	Project Control Framework
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PM	Particulate Matter
PPV	Peak Particle Velocity
PRoW	Public Rights of Way
pSAC	Possible Special Area of Conservation
pSPA	Potential Special Protection Area
RAMS	Risk Assessment and Method Statement
RBMP	River Basin Management Plan
rMCZ	Recommended Marine Conservation Zone
RIGS	Regionally Important Geological Site
SAC	Special Area of Conservation

Abbreviation	Definition
SCI	Sites of Community Importance
SEB	Statutory Environmental Bodies
SOAEL	Significant Observed Adverse Effect Level
SoS	Secretary of State
SPA	Special Protection Area
SPRS	South Pennines Route Strategy
SPZ	Source Protection Zone
SRN	Strategic Road Network
SSSI	Site of Special Scientific Interest
TPO	Tree Preservation Order
TTM	Temporary Traffic Management
UXO	Unexploded Ordnance
VDM	Variable Demand Modelling
WFD	Water Framework Directive
ZoI	Zone of Influence
ZTV	Zone of Theoretical Visibility

Term	Meaning
Agricultural Land Classification (ALC)	A relative measure of agricultural land quality in England and Wales. In practice, the ALC grades are defined by reference to the land's physical characteristics. The most productive and flexible land falls into Grades 1 & 2 and Subgrade, 3a and collectively comprises about one-third of the agricultural land in England and Wales. About half the land is of moderate quality in Subgrade 3b or poor quality in Grade 4. The remainder is very poor quality land in Grade 5, which mostly occurs in the uplands.
Aquifer	An underground rock formation containing water, often used as a water source.
Attenuation	Reduction. The term used in drainage design to indicate a reduction in the rate of flow or flooding risk, for example, by means of a pond to hold back water.
Biodiversity	Biological diversity: The variety of life forms in a given area, includes all species of plants and animals, their genetic variation and the complex ecosystems of which they are part.
Cumulative impact	The combined residual impact of a proposed scheme over the entirety of the scheme, as opposed to residual impact for individual sections of the scheme; also the combined impact with other schemes.
Cutting	A section of road where the surrounding land is at a higher level and the ground has been dug away to put in the road.
Decibel (dB)	Measurement of noise on a logarithmic scale. The range of audible sound pressures is approximately 0 dB to 140 dB. A single dB figure is unhelpful as it describes the total amount of acoustic energy measured and does not take any account of the ear's ability to hear certain frequencies more readily than others.
Design Year	In the case of this scheme, 15 years after assumed opening.
Do-Minimum	Future situation assuming no scheme is provided, but that maintenance is on-going.
Do-Something	Future situation with the scheme provided.
Earthworks	The process of excavating or increasing level of soil.
Floodplain	Area of land prone to flooding and protected against development. The indicative floodplain is the flood risk area based on a 1 in 100 year storm.

Term	Meaning
Greenhouse Gas	A gas that helps contribute towards global warming by trapping heat given off from the earth's surface. Under the UN's Kyoto Protocol, the 6 greenhouse gases are carbon dioxide, methane, nitrous oxide, perfluorocarbons, hyrdofluorocarbons and sulphur hexafluoride.
Listed Building	Building or structure listed by the Secretary of State as being of 'special architectural or historic interest'.
Opening Year	In the case of this scheme, assumed to be 2023.
Receptor	Environmental feature that has the potential to be adversely or beneficially affected by an impact of the proposed scheme, e.g., local residents, wildlife and water bodies.
Residual impact	Effects on the environment that occur after mitigation of potential impacts has been implemented.
Source Protection Zone (SPZ)	Area of groundwater protected by the Environment Agency.
Stakeholder	An organisation or individual with a particular interest in the project.
Statutory consultees	Individuals or groups which are contacted and requested to provide information or comment on a scheme, legally recognised under statute.
Study Area	The spatial area within which environmental effects are assessed i.e. extending a distance from the project footprint in which significant environmental effects could occur (this may vary between the topic areas).
Water Framework Directive	The Water Framework Directive (2000/60/EC) (WFD) is a wide-ranging piece of European environmental legislation for the protection of water resources that is being transposed into UK Law.

APPENDIX A

Figures

RIVER WYRE

A585 Mains Lane

A585 Garstang New Road

0 500 1000m
1 : 25 000

SCHEME LOCATION

0 5 10km
1 : 250 000

SCHEME LOCATION

THE SCHEME

KEY:

Draft Order Limits

The Scheme

Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
04	S2	08.11.17	EIA SCOPING	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

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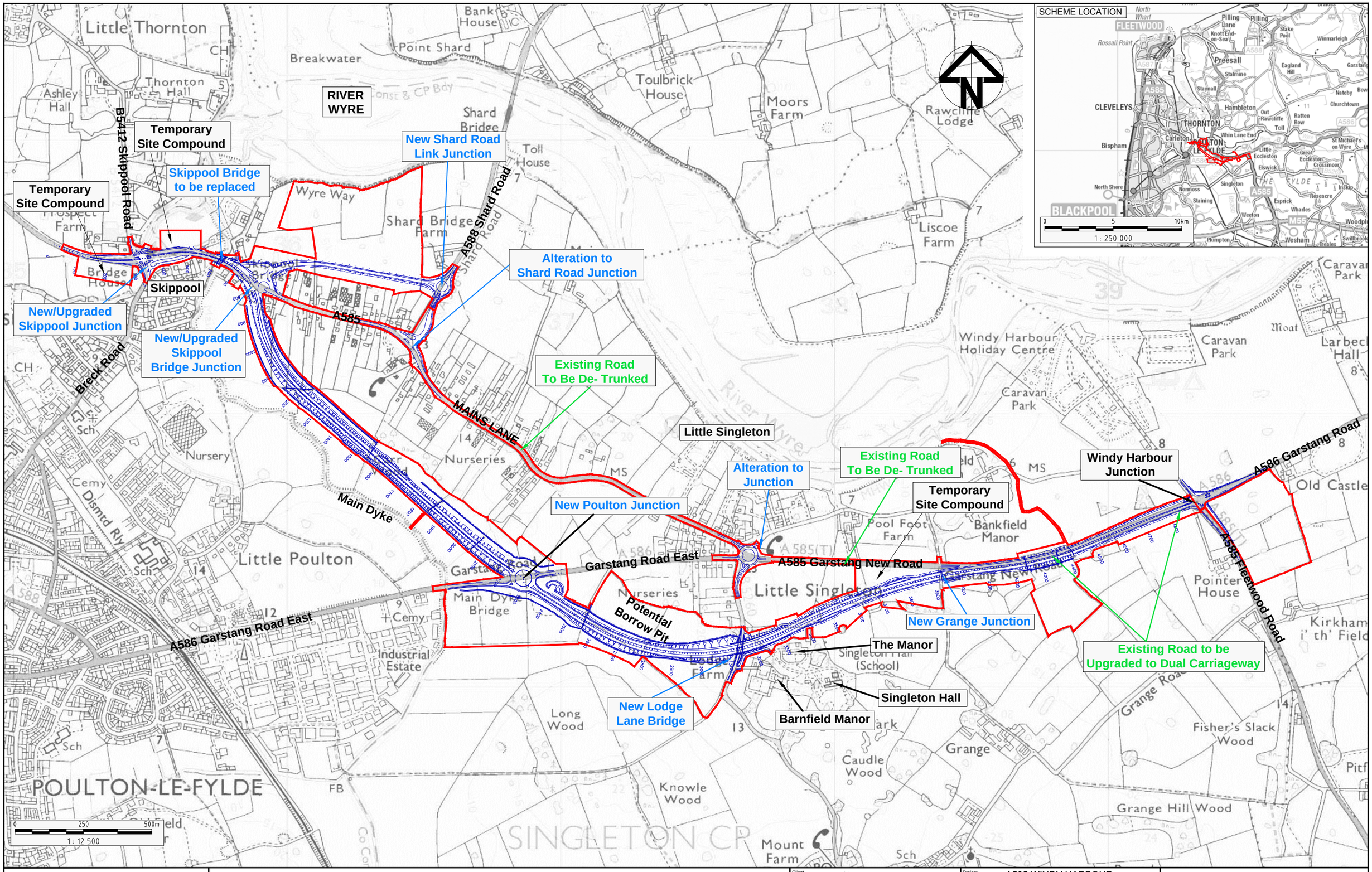
Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: INTRODUCTION: LOCATION PLAN

EIA SCOPING REPORT

Scale	1:25 000	Date - 08.11.17	
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 1.1	Rev	04

K:\projects\UA008015 - A585 - M56\A585\CURRENT 2017\EIA-Scoping-Report-FINAL-for-issue\1.1-UA008849-UE31D-04-Location Plan.dwg



Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

KEY:

Draft Order Limits

The Scheme

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Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

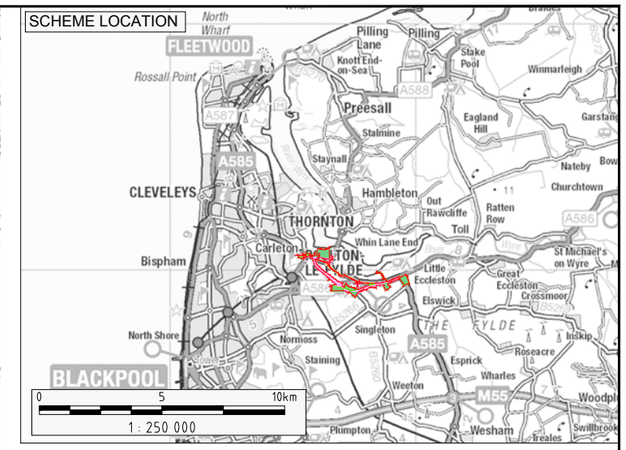
Drawing title: INTRODUCTION: THE SCHEME

EIA SCOPING REPORT

Scale	1:12 500	Date - 08.11.17	
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 1.2	Rev	04

K:\projects\UA008015 - A585 - M56\A585\CURRENT 2017\EIA-Scoping-Report-FINAL-for-issue\1.2-UA008849-UE31D-04-Red-Line-Boundary.dwg

SCHEME LOCATION



KEY:

- Draft Order Limits
- Indicative Permanent Land Take
- Indicative Temporray Land Take (Will include land for site compunds and environmental mitigation)
- Existing Highway (Detrunking Corridor)

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04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

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Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

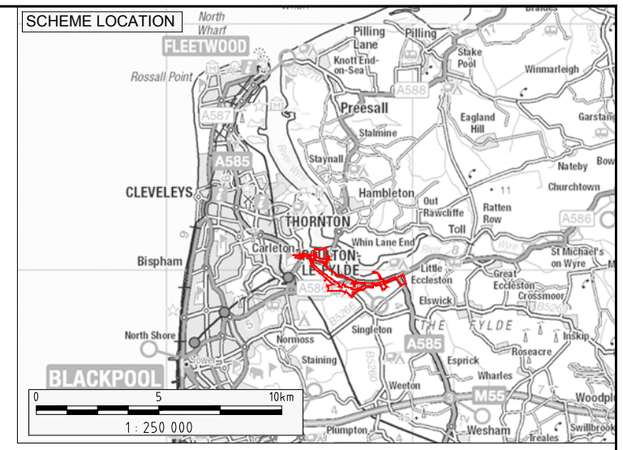
Drawing title: INTRODUCTION: PERMANENT AND TEMPORARY LAND TAKE REQUIRED FOR THE SCHEME

Drawing status: EIA SCOPING REPORT

Scale	1:12 500	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	K.BURROWS		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 1.3	Rev	04

K:\projects\UA008015 - A585 - M56\A585\CURRENT 2017\EIA-Scoping-Report-FINAL-for-issue\1.3-UA008849-UE31D-04-Land-Take.dwg

SCHEME LOCATION



Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

KEY:

- Draft Order Limits
- Air Quality Management Area
- Local Authority Boundary
- Highways England Diffusion Tube Location
- Local Authority Diffusion Tube Location

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Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: AIR: AIR QUALITY MANAGEMENT AREAS AND MONITORING LOCATIONS

EIA SCOPING REPORT

Scale	1:25 000	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	E.HASSELL		
Approved By	K.BURROWS		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 7.1	Rev	04

K:\projects\UA008015 - A585 - M58\A585\CURRENT 2017\EIA-Scoping-Report-FINAL-for-issue\7.1-UA008849-UE31D-04-AQMA's.dwg

RIVER WYRE

Poulton-Le-Fylde Conservation Area

SEE INSET

Ribchester to Poulton-Le-Flyde Roman Road

Main Dyke

Singleton Conservation Area

Ice House at Singleton Hall

Singleton Park

SCHEME LOCATION

0 5 10km
1 : 250 000

0 500 1000m
1 : 25 000

0 300 600m
1 : 15 000

Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

KEY:

- Draft Order Limits
- 1km Study Area
- Non Statutory Heritage Asset Area
- Non-Statutory Heritage Asset
- Grade II Listed Building
- Non-Statutory Linear Heritage Asset
- Conservation Area

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Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: CULTURAL HERITAGE: ASSET LOCATION PLAN AND STUDY AREA

EIA SCOPING REPORT

Scale	1:25 000	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 8.1	Rev	04

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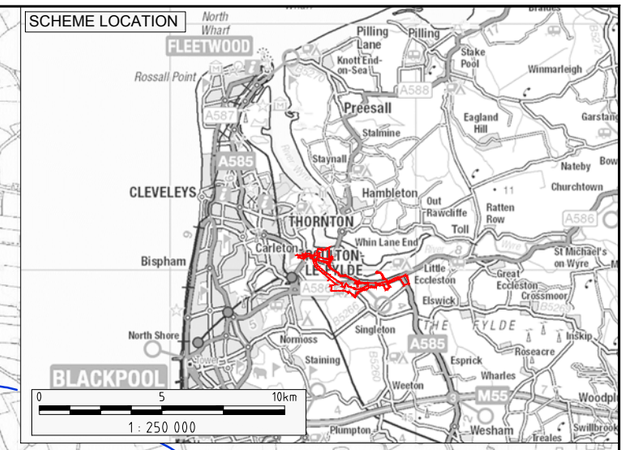
SCHEME LOCATION



KEY:

- Draft Order Limits
- 500m Study Area
- 2km Study Area

Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

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Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: BIODIVERSITY: DESIGNATED AND PROPOSED STATUTORY SITES

EIA SCOPING REPORT

Scale	1:25 000	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 9.1	Rev	04

K:\projects\UA008015 - A585 - M56\A585\CURRENT 2017\EIA-Scoping-Report-FINAL-for-issue\9.1-UA008849-UE31D-04-Biodiversity-Designated-Sites.dwg

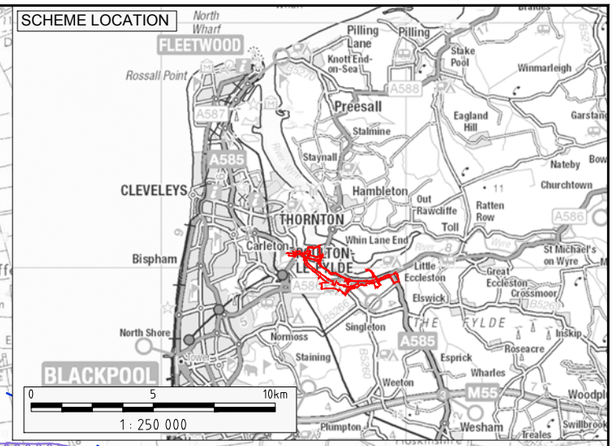
Skippool Marsh and Thornton Bank

RIVER WYRE

Shard Bridge Field Ditch

River Wyre - Upper Tidal Section

SCHEME LOCATION



KEY:

- Draft Order Limits
- 500m Study Area
- 2km Study Area
- Biological Heritage Site

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0 500 1000m
1 : 25 000

Rev	Status	Rev. Date	Purpose of revision	Drawn	Checked	Apprv'd
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03	S2	09.10.17	EIA SCOPING	JN	KB	DH
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01	S2	08.06.17	EIA SCOPING	JN	KB	DH

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Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: BIODIVERSITY: NON-STATUTORY DESIGNATED SITES

EIA SCOPING REPORT

Scale	1:25 000	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 9.2	Rev	04

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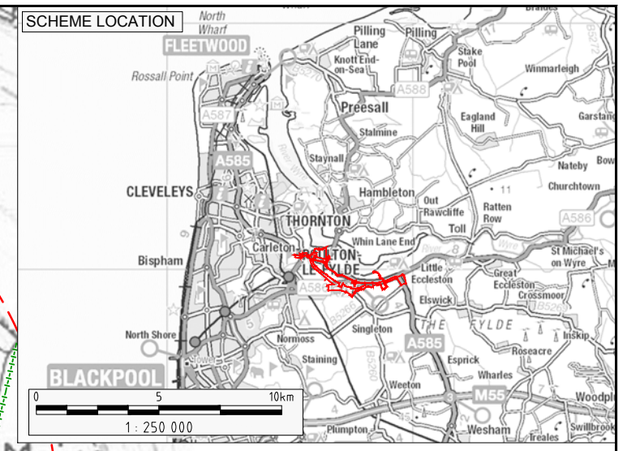
SCHEME LOCATION



KEY:

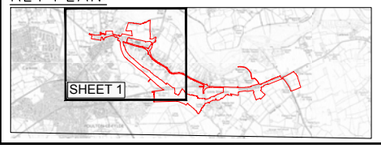
- Draft Order Limits
- 500m Study Area
- Broad-Leaved Woodland
- Dense Continous Scrub
- Scattered Scrub
- Broadleaved Tree
- Coniferous Tree
- SI — Semi-Improved Neutral Grassland
- I — Improved Grassland
- SI — Species Poor Semi-Improved Grassland
- Waterbody
- Saltmarsh
- Scattered Saltmarsh
- Mud/Sand
- A — Amenity Grassland
- A — Arable
- Native Species Poor Intact Hedge
- Native Species Poor Defunct Hedge
- Defunct Native Species Poor Hedge & Trees
- Dry Ditch
- Bareground
- 1 — Target Note
- P77 — Ponds with Great Crested Newt Presence Confirmed
- P58 — Ponds with Great Crested Newt Absence Confirmed
- P101 — Ponds Where Great Crested Newt Status Unknown

SEE SHEET 2 OF 3

0 160 320m
1 : 8000

Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

KEY PLAN:



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Client: highways england

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Coordinating office: 5th Floor 401 Faraday Street Birchwood Park Warrington, WA3 6GA Tel: 44 (0)1925 800700
www.arcadis.com

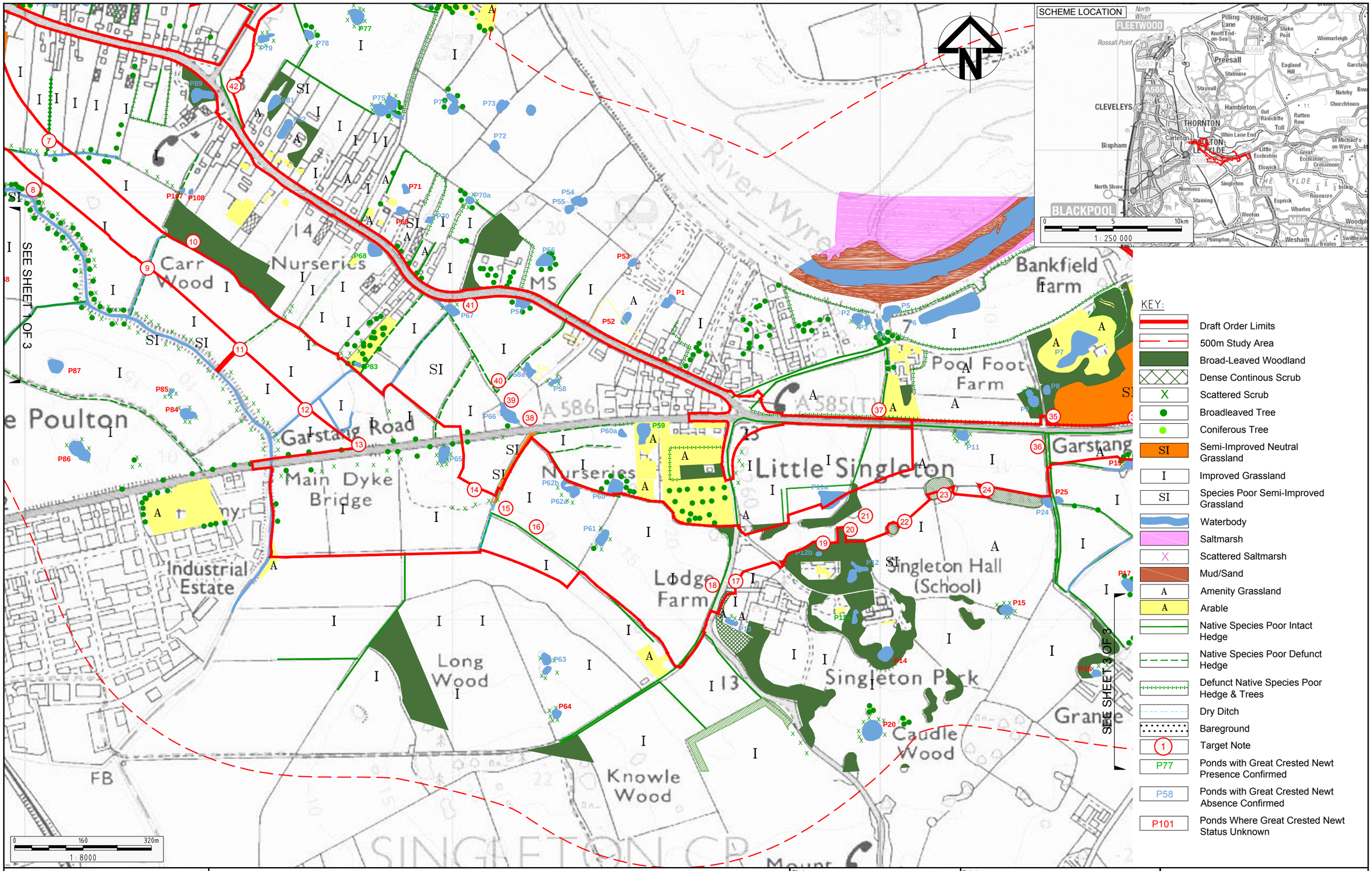
Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: BIODIVERSITY: PHASE 1 HABITAT SURVEY SHEET 1 OF 3

EIA SCOPING REPORT

Scale	1:8 000	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 9.3	Rev	04

K:\projects\UA008015 - A585 - M56\A585\CURRENT 2017\EIA-Scoping-Report-FINAL-for-issue\9.3-UA008015-UE31D-04-Phase1-Habitat-Survey.dwg

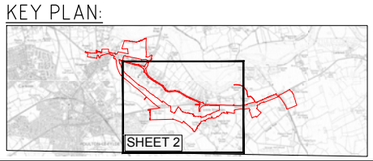


KEY:

- Draft Order Limits
- 500m Study Area
- Broad-Leaved Woodland
- Dense Continous Scrub
- Scattered Scrub
- Broadleaved Tree
- Coniferous Tree
- SI — Semi-Improved Neutral Grassland
- I — Improved Grassland
- SI — Species Poor Semi-Improved Grassland
- Waterbody
- Saltmarsh
- Scattered Saltmarsh
- Mud/Sand
- A — Amenity Grassland
- A — Arable
- Native Species Poor Intact Hedge
- Native Species Poor Defunct Hedge
- Defunct Native Species Poor Hedge & Trees
- Dry Ditch
- Bareground
- 1 — Target Note
- P77 — Ponds with Great Crested Newt Presence Confirmed
- P58 — Ponds with Great Crested Newt Absence Confirmed
- P101 — Ponds Where Great Crested Newt Status Unknown

Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

KEY PLAN:



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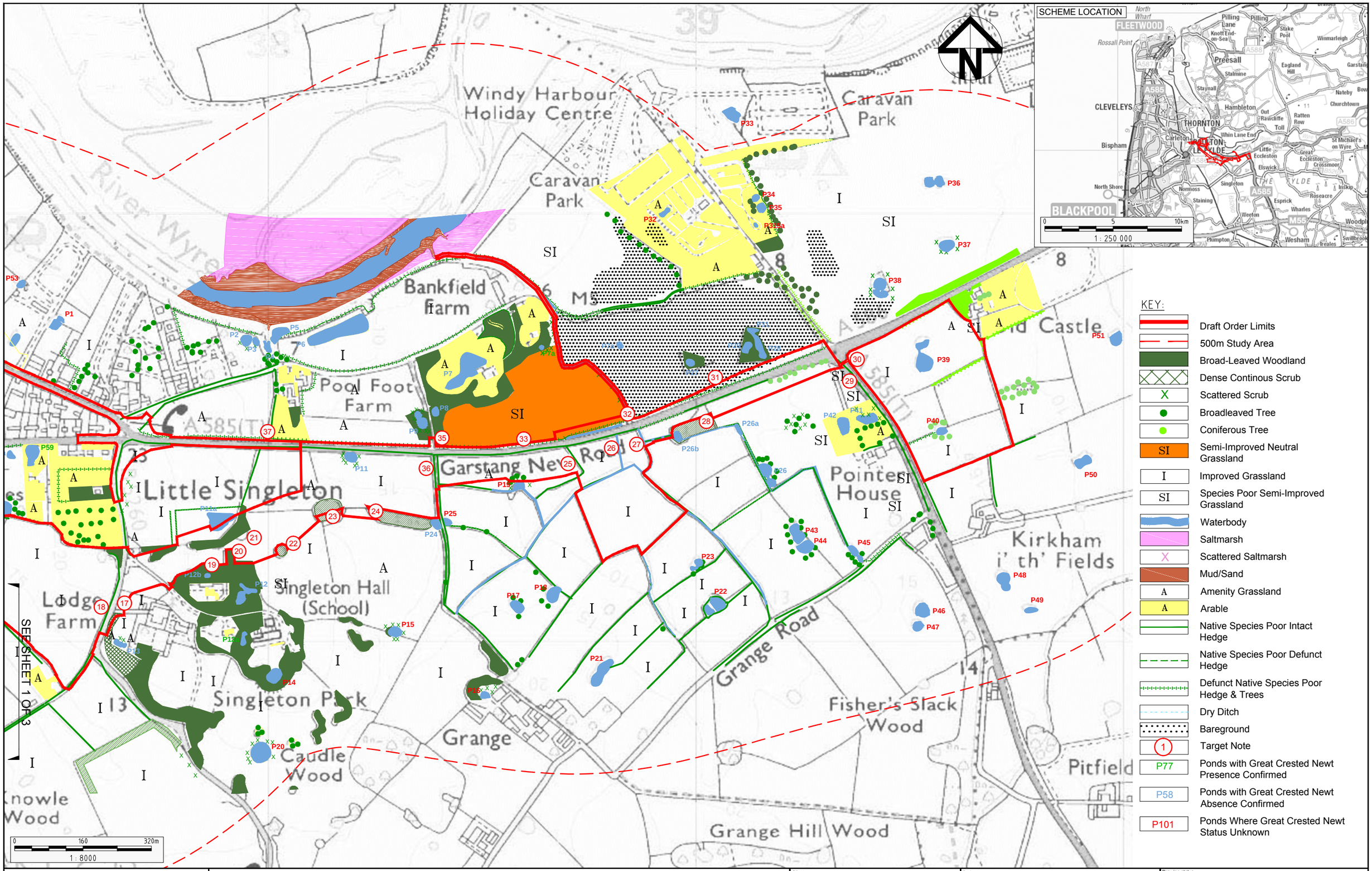
Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: BIODIVERSITY: PHASE 1 HABITAT SURVEY SHEET 2 OF 3

EIA SCOPING REPORT

Scale	1:8 000	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 9.3	Rev	04

K:\projects\UA008015 - A585 - M56\A585\CURRENT 2017\EIA-Scoping-Report-FINAL-for-issue\9.3-UA008015-UE31D-04-Phase1-Habitat-Survey.dwg



Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
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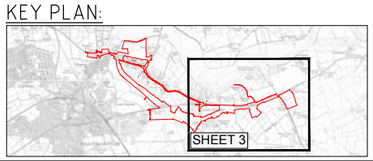
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

KEY PLAN:



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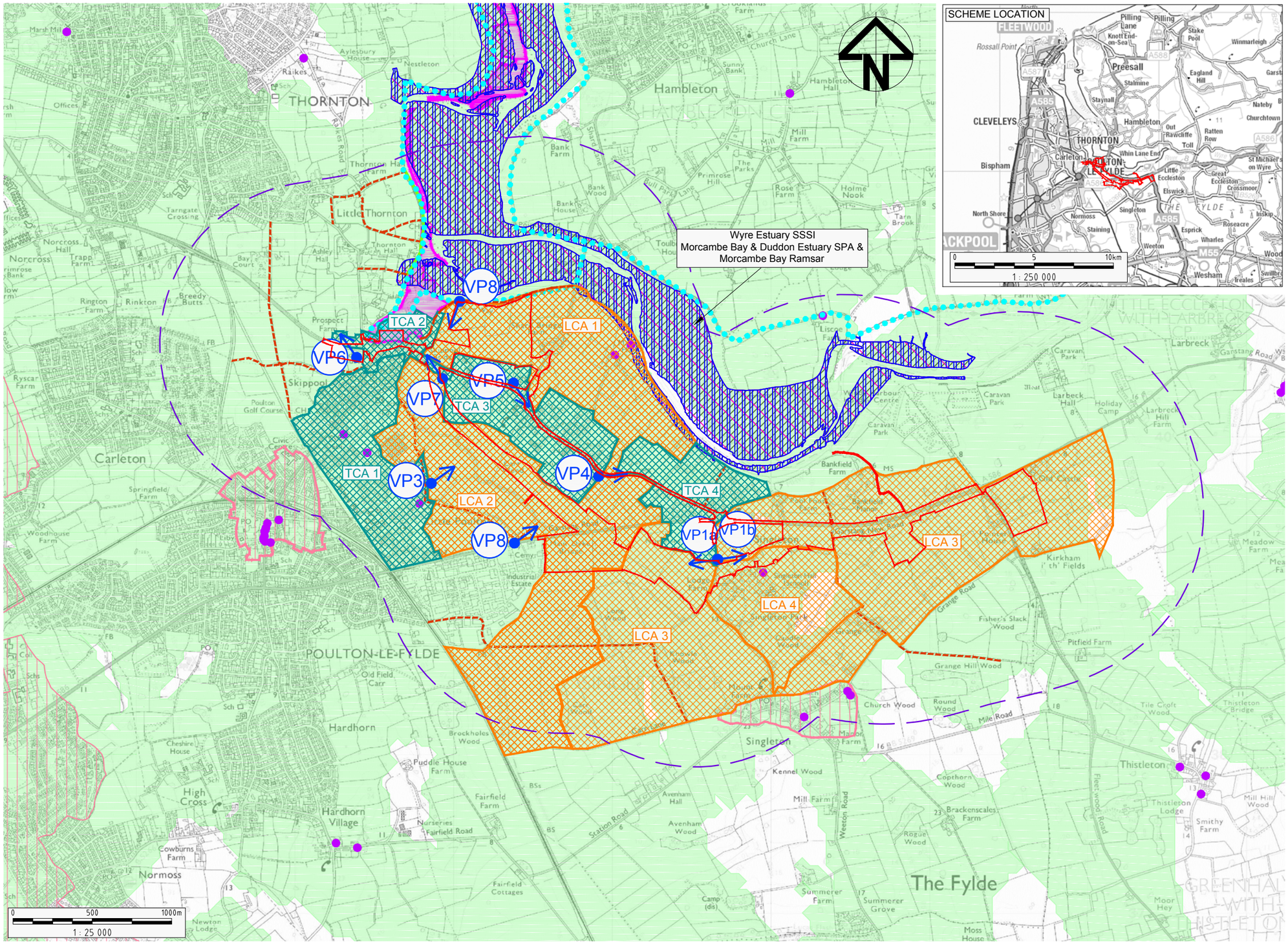
Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: BIODIVERSITY: PHASE 1 HABITAT SURVEY SHEET 3 OF 3

Drawing status	EIA SCOPING REPORT		
Scale	1:8 000	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 9.3	Rev	04

K:\projects\UA008015 - A585 - M56\A585\CURRENT 2017\EIA-Scoping-Report-FINAL-for-issue\9.3-UA008015-UE31D-04-Phase1-Habitat-Survey.dwg



NOTES:

1. The ZTV was calculated using windfarm computer software based on ordnance survey (o.s.) opendata vectormap raster tiles of 1:50,000 scale and "o.s. raster 50" dtm grid data based on a 50m grid.
2. The ZTV illustrates an area of theoretical visibility based on proposed road scheme development.
3. The ZTV is based on landform data only, with any ridge lines, plateaus and valleys reflected in the extent of predicted visibility, but does not take account of land cover.
4. The ZTV represents a "worst case" scenario with regard to the visibility of an assumed lighting column height of 12m from the proposed new road levels. The ZTV however does form an appropriate starting point for undertaking the visual impact assessment and selection of viewpoints.

VP 1 Viewpoint Location

1. Views from Lodge Lane looking a. West & b. East
2. Public Right of Way and Residential Properties on Little Poulton Lane, looking North and East
3. View from A585 looking East
4. View from A585 West of junction with A588 (Shard Road) looking East
5. View from access to Mains Hall, looking South
6. View from Shard Riverside Inn, looking South

NOTE: AREAS OUTSIDE OF SETTLEMENTS ARE SUBJECT TO LOCAL PLAN POLICY REGARDING AREAS OF PARTICULARLY ATTRACTIVE COUNTRYSIDE

KEY:

- Area from which part of, or all of, scheme may be visible
- Draft Order Limits
- Study Area (1km radius)
- Wyre Way Recreational Route
- Public Right of Way
- Bridleway
- Conservation Area
- Listed Building
- Wyre Estuary Country Park
- Ramsar Site
- Special Protection Area (SPA)
- Site of Special Scientific Interest (SSSI)
- Landscape Character Area
- Townscape Character Area

Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
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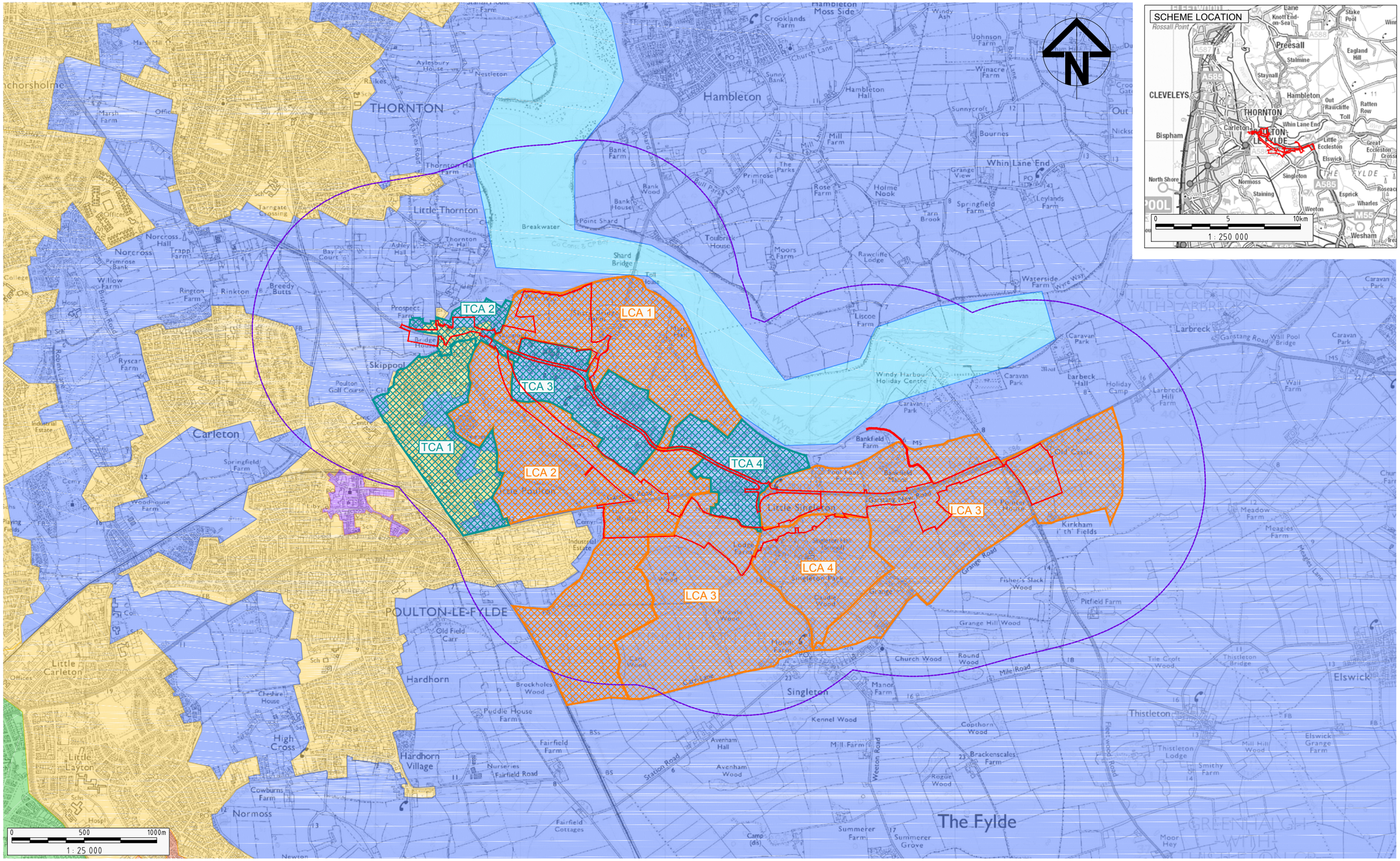
A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: LANDSCAPE: DESIGNATIONS, ZONE OF THEORETICAL VISIBILITY & VIEWPOINTS

EIA SCOPING REPORT

Scale	1:25 000	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 10.1	Rev	04

K:\projects\UA008015 - A585 - M56\A585\CURRENT 2017\EIA-Scoping-Report-FINAL-for-issue\10.1-UA008015-UE31D-04_Southern-ZTV.dwg



Rev	Status	Rev. Date	Purpose of revision	Drawn	Checked	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

KEY:

- Draft Order Limits
- Study Area
- Landscape Character Area
- Townscape Character Area

Lancashire County Council Landscape Character Types

- Coastal Dunes
- Coastal Plain
- Historic Core
- Industrial
- Mossland
- Open Coastal Marsh
- Surburban

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A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title

LANDSCAPE : LANDSCAPE CHARACTER AREAS

EIA SCOPING REPORT

Scale	1:25 000	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 10.2	Rev	04

K:\projects\UA008015 - A585 - M56\A585\CURRENT 2017\EIA-Scoping-Report-FINAL-for-issue\10.2-UA008015-UE31D-04-Landscape-Character-Areas.dwg

VP1A: B5260 LODGE LANE: VIEW LOOKING WEST TO MAIN DYKE AND POULTON INDUSTRIAL ESTATE

VP1B: B5260 LODGE LANE: VIEW LOOKING EAST

Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

Client: highways england

Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: LANDSCAPE: PHOTOGRAPHIC VIEWPOINT LOCATIONS SHEET 1 OF 5

EIA SCOPING REPORT

Scale	N.T.S	Date - 08.11.17	
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 10.3		Rev 04

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VP2: GARSTANG ROAD EAST: LOOKING EAST FROM PROW

VP3: LITTLE POULTON LANE: LOOKING NORTH AND EAST FROM PROW AND RESIDENTIAL PROPERTIES

Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

Client: highways england

Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: LANDSCAPE: PHOTOGRAPHIC VIEWPOINT LOCATIONS SHEET 2 OF 5

Drawing status: EIA SCOPING REPORT

Scale	N.T.S	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 10.3	Rev	04

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VP4: A585 MAINS LANE LOOKING EAST

VP5: A585 MAINS LANE LOOKING EAST NEAR TO THE JUNCTION WITH A588 SHARD ROAD

Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

Client: highways england

Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: LANDSCAPE: PHOTOGRAPHIC VIEWPOINT LOCATIONS SHEET 3 OF 5

Drawing status: EIA SCOPING REPORT

Scale	N.T.S	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 10.3	Rev	04

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VP6: A585 MAINS LANE LOOKING WEST AND NORTH TOWARDS SKIPPOOL BRIDGE

VP7: BRECK ROAD LOOKING NORTH AND EAST ACROSS EXISTING JUNCTION

Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

Client: highways england

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Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: LANDSCAPE: PHOTOGRAPHIC VIEWPOINT LOCATIONS SHEET 4 OF 5

Drawing status: EIA SCOPING REPORT

Scale	N.T.S	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 10.3	Rev	04

K:\projects\UA008015 - A585 - M56\A585\CURRENT 2017\EIA-Scoping-Report-FINAL-for-issue\10.3-UA008849-UE31D-04_Photos.dwg

VP8: THE WYRE WAY PROW LOOKING SOUTH TOWARDS SKIPPOOL BRIDGE

Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

Client: highways england

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Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: LANDSCAPE: PHOTOGRAPHIC VIEWPOINT LOCATIONS SHEET 5 OF 5

Drawing status	EIA SCOPING REPORT		
Scale	N.T.S	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 10.3	Rev	04

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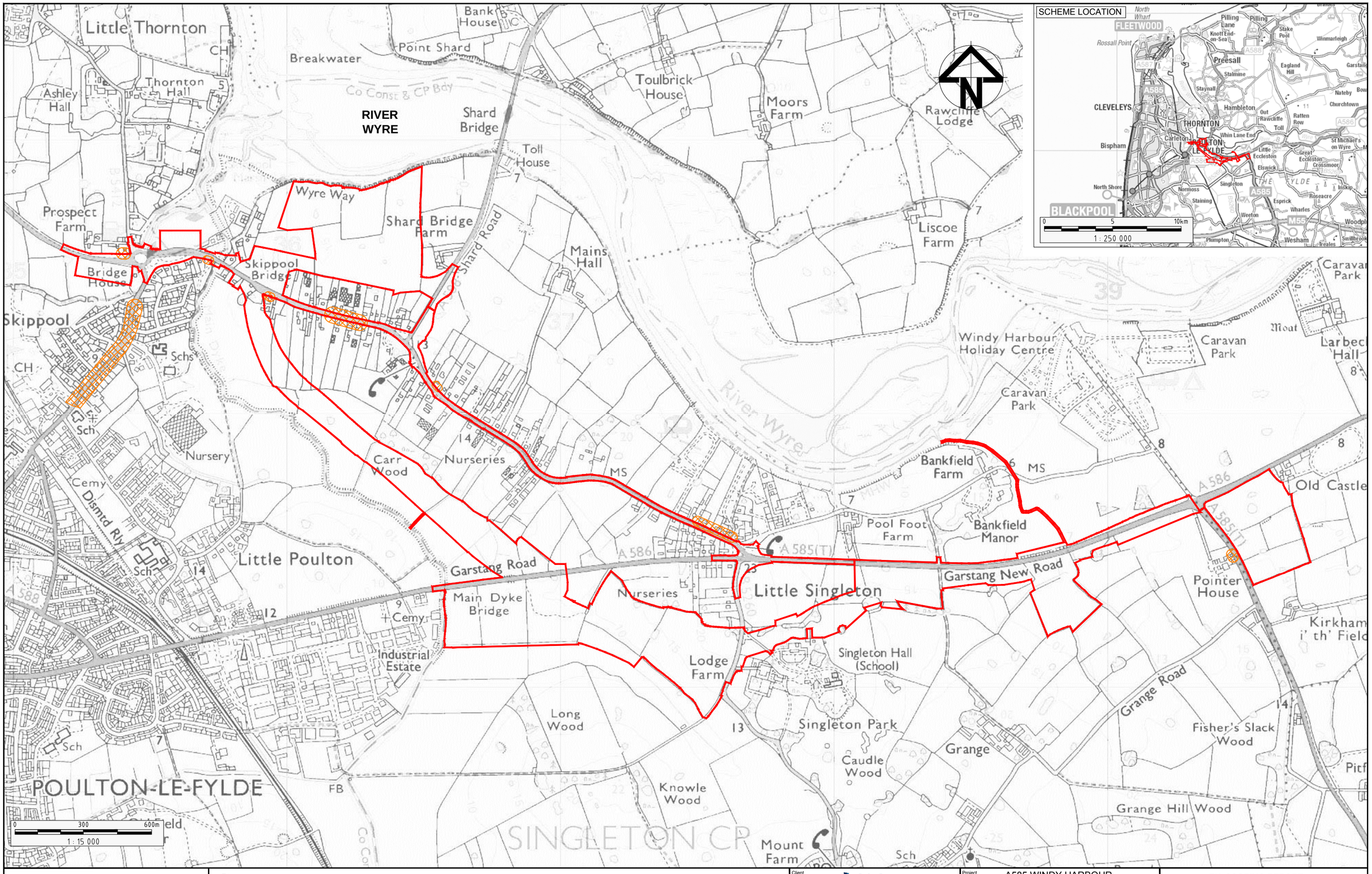

Rev	Status	Rev. Date	Purpose of revision	Drawn	Checked	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

KEY:

Draft Order Limits

Noise Important Area

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Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: NOISE AND VIBRATION: NOISE IMPORTANT AREAS

EIA SCOPING REPORT

Scale	1:15 000	Date - 08.11.17	
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 11.1	Rev	04

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RIVER WYRE

SCHEME LOCATION

0 5 10km
1 : 250 000

0 300 600m
1 : 15 000

KEY:

- Draft Order Limits
- 500m Study Area
- Planning Application for Residential Development
- Wyre Way Recreational Route
- Public Right of Way
- Bridleway
- Community Facility

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04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

Client: highways england

Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: PEOPLE AND COMMUNITIES: PUBLIC RIGHTS OF WAY AND KEY COMMUNITY FACILITIES

EIA SCOPING REPORT

Scale	1:15 000	Date - 08.11.17	
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 12.1	Rev	04

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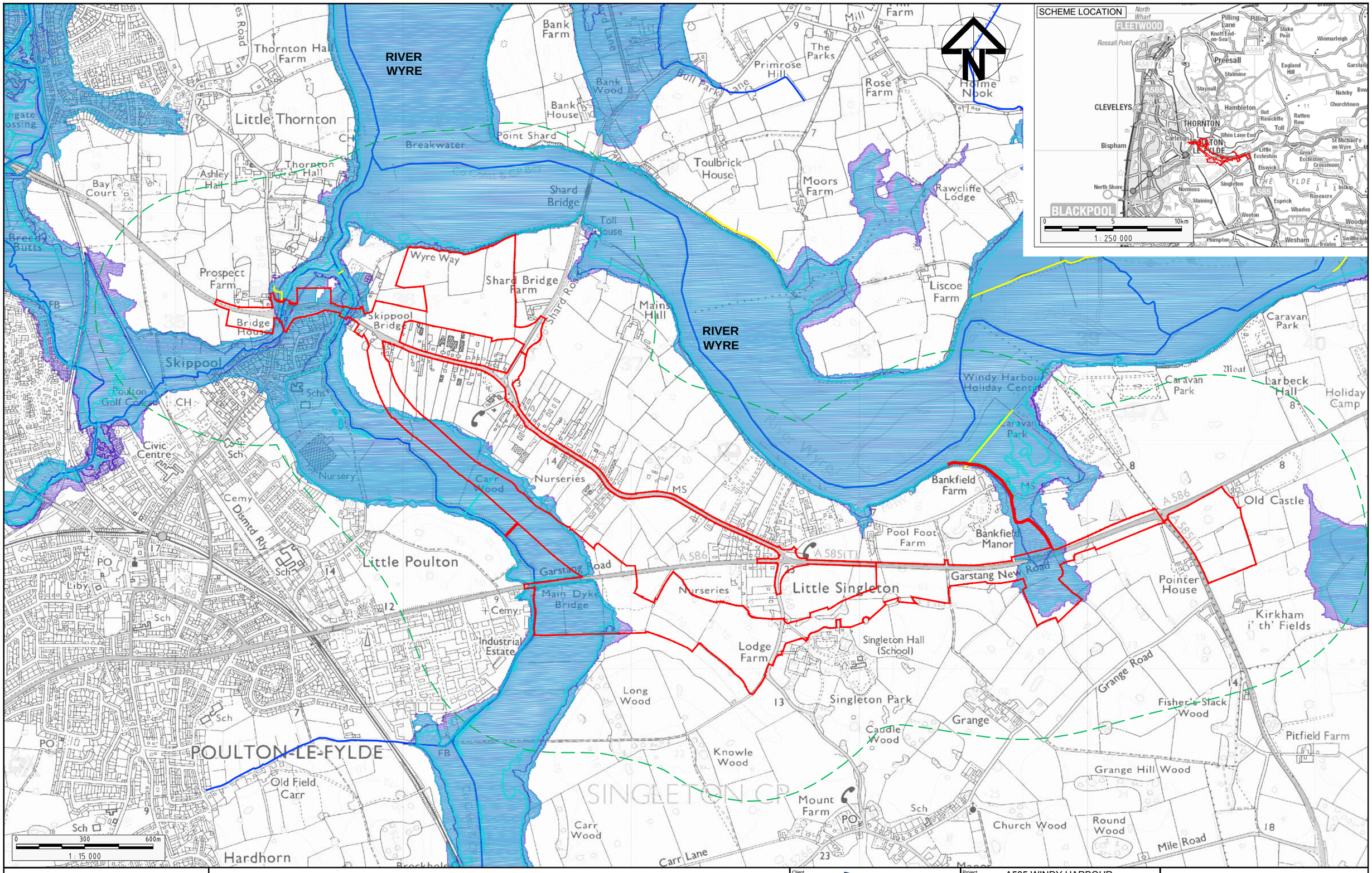

KEY:

Flood Zones

- Draft Order Limits
- 500m Study Area
- Main Rivers
- Flood Zone 3
- Flood Zone 2
- Flood Defences

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Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

Client: highways england

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www.arcadis.com

Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: ROAD DRAINAGE AND THE WATER ENVIRONMENT: WATERBODIES AND FLOOD ZONES

EIA SCOPING REPORT

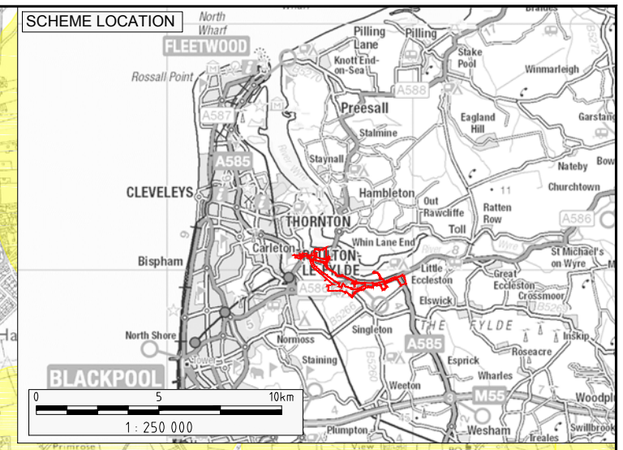
Scale	1:15 000	Date - 08.11.17	
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 13.1	Rev	04

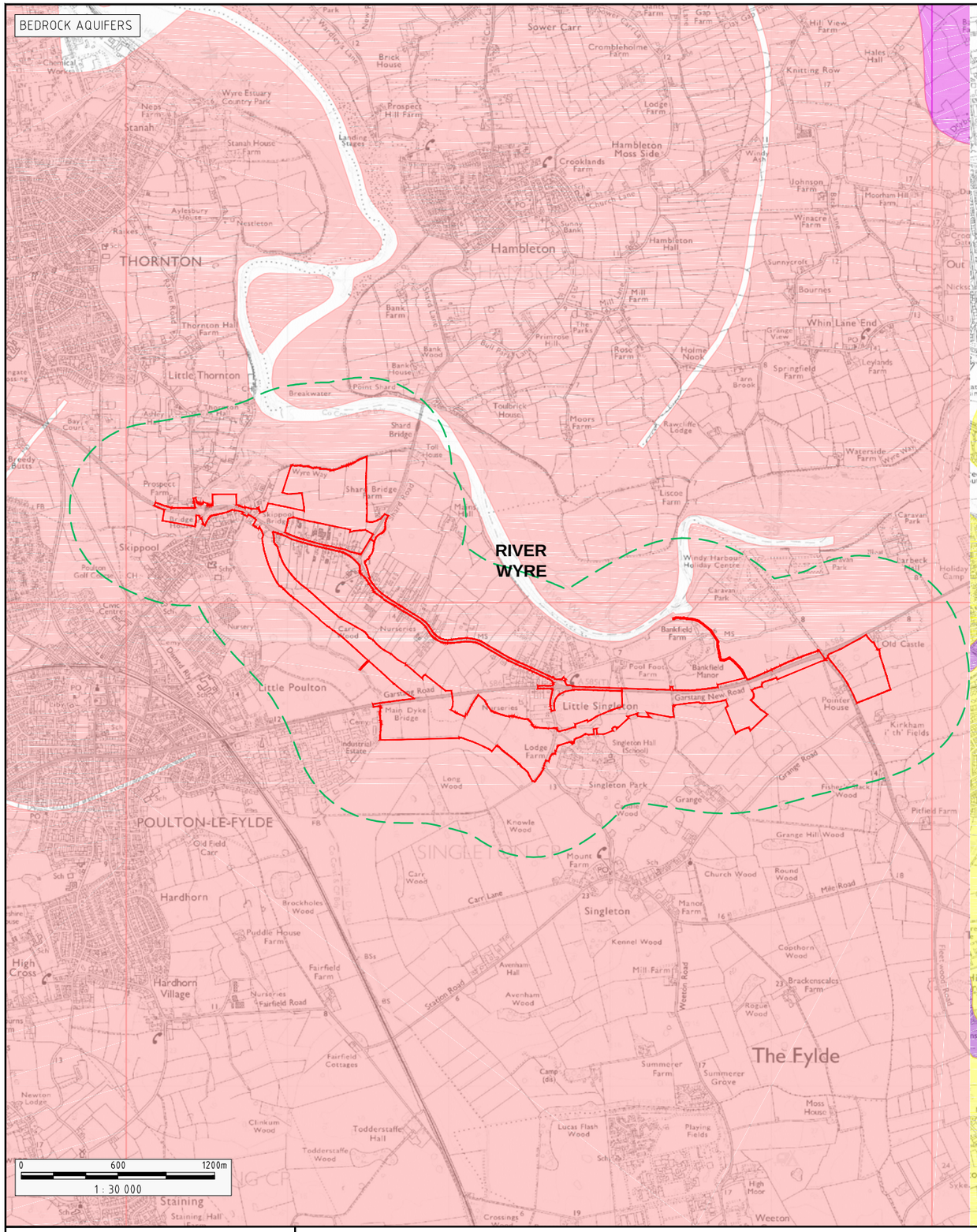
K:\projects\UA008015 - A585 - M56\A585\CURRENT 2017\EIA-Scoping-Report-FINAL-for-issue\13.1-UA008849-UE31D-04-Road-Drainage-and-Water-Environment.dwg

BEDROCK AQUIFERS

SUPERFICIAL AQUIFERS

SCHEME LOCATION





KEY:

- Draft Order Limits
- 500m Study Area

Bedrock Aquifers
- Principal
- Secondary B

Superficial Aquifers
- Secondary A
- Secondary (Undifferentiated)

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Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
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03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

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www.arcadis.com

Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: ROAD DRAINAGE AND THE WATER ENVIRONMENT: AQUIFERS

EIA SCOPING REPORT

Scale	1:30 000	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 13.2	Rev	04

K:\projects\UA008015 - A585 - M56\A585\CURRENT 2017\EIA-Scoping-Report-FINAL-for-issue\13.2-UA008849-UE31D-04-Road-Drainage-and-Water-Environment.dwg

GROUNDWATER

SURFACE WATER

SCHEME LOCATION

RIVER WYRE

MAIN DYKE

0 600 1200m
1 : 30 000

0 5 10km
1 : 250 000

Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

KEY:

Draft Order Limits

500m Study Area

Groundwater

Groundwater Water Framework Directive

Surface Water

Water Framework Directive River Waterbodies

Water Framework Directive River Catchments

Water Framework Directive Transitional Waterbodies

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Client: highways england

ARCADIS

Registered office: Manning House, 22 Carlisle Place, London, SW1P 1JA
Coordinating office: 5th Floor 401 Faraday Street, Birchwood Park, Warrington, WA3 6GA, Tel: 44 (0)1925 800700
www.arcadis.com

Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: ROAD DRAINAGE AND THE WATER ENVIRONMENT: WATER FRAMEWORK DIRECTIVE WATERBODIES

EIA SCOPING REPORT

Scale	1:30 000	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 13.3	Rev	04

K:\projects\UA008015 - A585 - M56\A585\CURRENT 2017\EIA-Scoping-Report-FINAL-for-issue\13.3-UA008849-UE31D-04-Water-Framework.dwg

SCHEME LOCATION

0 5 10km
1 : 250 000

0 300 600m
1 : 15 000

Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

KEY:

- Draft Order Limits
- 500m Study Area
- Potentially Contaminative Land Use
- Infilled Ponds
- Ponds
- Discharge Consent
- Historic Tank Locations
- Authorised Landfill Site (approx)
- Historic Landfill Site
- Authorised Landfill Site
- Unknown Filled Ground & Mapped Artificial Made Ground

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Client: highways england

ARCADIS
Registered office: Manning House, 22 Carlisle Place, London SW1P 1JA
Coordinating office: 5th Floor 401 Faraday Street, Birchwood Park, Warrington, WA3 6GA
Tel: 44 (0)1925 800700
www.arcadis.com

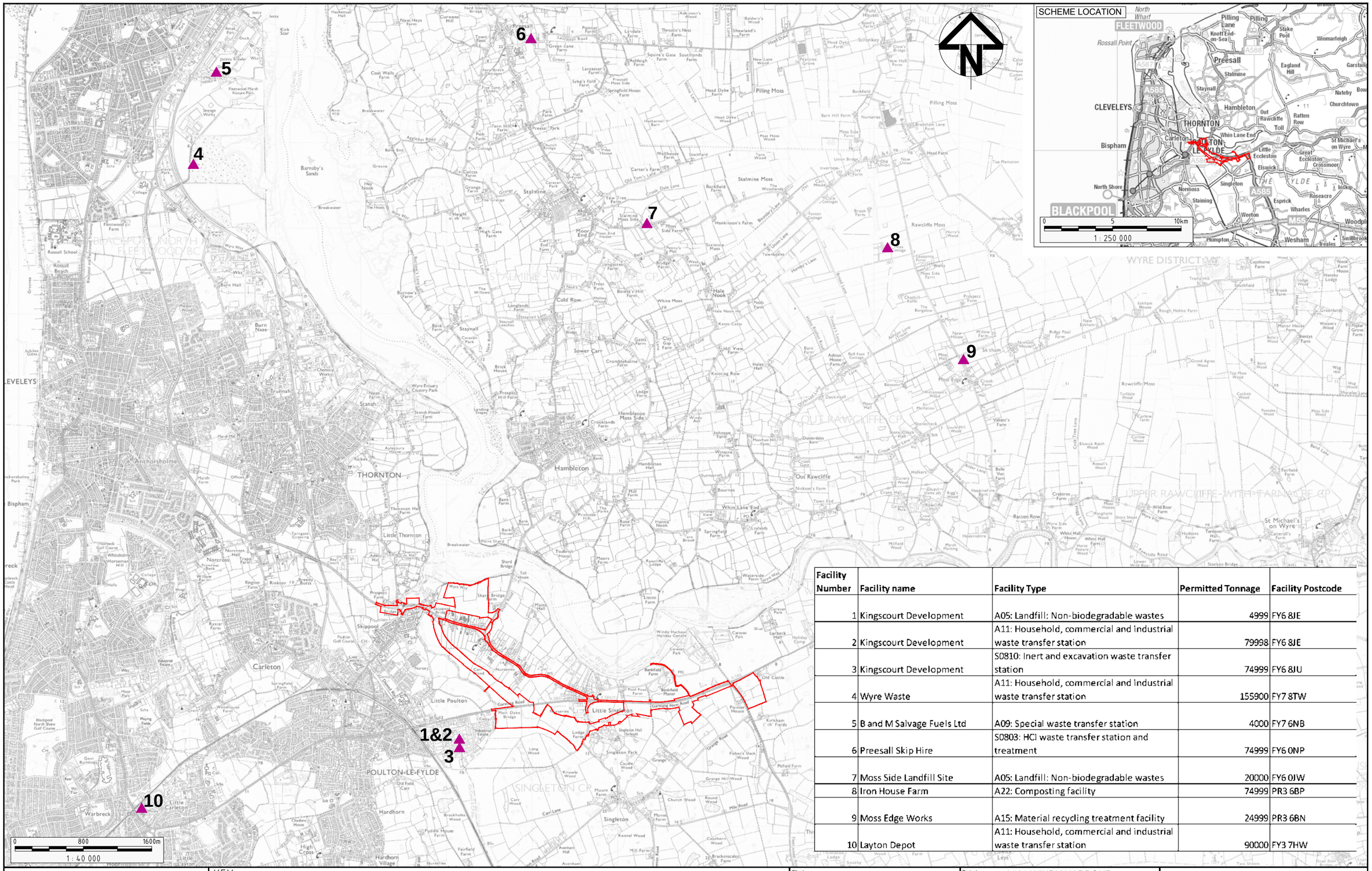
Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: GEOLOGY AND CONTAMINATED LAND: ENVIRONMENTAL FEATURES ASSOCIATED WITH GEOLOGY AND CONTAMINATED LAND

PRELIMINARY CONFIDENTIAL

Scale	1:15 000	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 14.1	Rev	04

K:\projects\UA008015 - A585 - M56\A585\CURRENT 2017\EIA-Scoping-Report-FINAL-for-issue\14.1-UA008849-UE31D-04-Environmental-Features.dwg



Facility Number	Facility name	Facility Type	Permitted Tonnage	Facility Postcode
1	Kingscourt Development	A05: Landfill: Non-biodegradable wastes	4999	FY6 8JE
2	Kingscourt Development	A11: Household, commercial and industrial waste transfer station	79998	FY6 8JE
3	Kingscourt Development	S0810: Inert and excavation waste transfer station	74999	FY6 8JU
4	Wyre Waste	A11: Household, commercial and industrial waste transfer station	155900	FY7 8TW
5	B and M Salvage Fuels Ltd	A09: Special waste transfer station	4000	FY7 6NB
6	Preesall Skip Hire	S0803: HCl waste transfer station and treatment	74999	FY6 0NP
7	Moss Side Landfill Site	A05: Landfill: Non-biodegradable wastes	20000	FY6 0JW
8	Iron House Farm	A22: Composting facility	74999	PR3 6BP
9	Moss Edge Works	A15: Material recycling treatment facility	24999	PR3 6BN
10	Layton Depot	A11: Household, commercial and industrial waste transfer station	90000	FY3 7HW

KEY:

Draft Order Limits

Waste Management Facilities

Rev	Status	Rev. Date	Purpose of revision	Drawn	Checkd	Apprv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

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Client: highways england

ARCADIS

Registered office: Manning House 22 Carlisle Place London SW1P 1JA
Coordinating office: 5th Floor 401 Faraday Street Birchwood Park Warrington, WA3 6GA Tel: 44 (0)1925 800700
www.arcadis.com

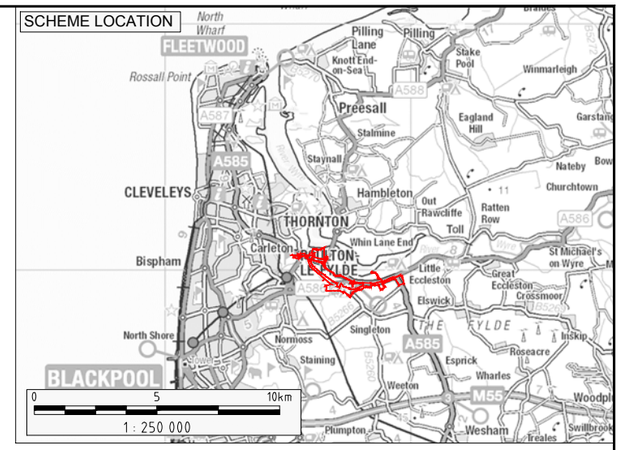
Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: MATERIALS: WASTE MANAGEMENT FACILITIES

EIA SCOPING REPORT

Scale	1:40 000	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 15.1		Rev

K:\projects\UA008015 - A585 - M56\A585\CURRENT 2017\EIA-Scoping-Report-FINAL-for-issue\15.1-UA008849-UE31D-04-Waste-Management-Facilities.dwg



ID	Description
1	Outline application for residential development of up to 90 dwellings
2	Demolition of existing buildings and erection of a retail store
3	Installation of a 4.5MW solar farm and associated infrastructure
4	Installation of a 4.9MW solar farm and associated infrastructure
5	Construction of a solar development to generate renewable electricity
6	Residential development comprising 519 dwellings
7	Outline application for development of up to 1400 residential dwellings and other mixed uses
8	Underground gas storage facility
9	Preston Western Distributor (PWD) connecting the M55 via a link road south to the A583
10	Associated the PWD road: M55 Junction 2 proposals. The PWD will connect to the M55 in the north via a new Junction 2
11	Associated with the PWD road: East West link Road will allow the new PWD to connect with Preston via an East to West access road
12	Associated with the PWD road: Will allow the PWD to connect with Cottam Way and provide a link for a new Cottam Park Rail Station
13	Renewal planning permission for the construction of the Broughton Bypass and improvements to existing highways
14	Planning allocation for mixed use development to be delivered over the next 15 - 20 years
15	Outline application for the erection of up to 130 dwellings
16	Reserved matters application for the erection of 160 dwellings with associated works
17	Outline application for the erection of up to 108 no. dwellings
18	Up to 900MW Megawatt electrical (MWe) Power Plant

0 800 1600m
1 : 40 000

KEY:

Draft Order Limits
1km Study Area
5km Study Area
10km Study Area

Cumulative Sites

Commercial
Community Facilities
Energy
Highways
Mixed Use
Residential

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Rev	Status	Rev. Date	Purpose of revision	Drawn	Checked	Approv'd
04	S2	08.11.17	EIA SCOPING FINAL	JN	KB	DH
03	S2	09.10.17	EIA SCOPING	JN	KB	DH
02	S2	18.08.17	EIA SCOPING	JN	KB	DH
01	S2	08.06.17	EIA SCOPING	JN	KB	DH

Client: highways england

ARCADIS
Registered office: Manning House 22 Carlisle Place London SW1P 1JA
Coordinating office: 5th Floor 401 Faraday Street Birchwood Park Warrington. WA3 6GA Tel: 44 (0)1925 800700
www.arcadis.com

Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing title: CUMULATIVE EFFECTS: PLANNED PROJECTS

EIA SCOPING REPORT

Scale	1:15 000	Date -	08.11.17
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	D.HOURD		
Project No.	UA008849	Original Size	A3
Drawing number	FIGURE 17.1		Rev

K:\projects\UA008015 - A585 - M56\A585\CURRENT 2017\EIA-Scoping-Report-FINAL-for-issue\17.1-UA008849-UE31D-04-Planned-Projects-Cumulative-Effects.dwg

APPENDIX B

Scope of Ecological Surveys Agreed with Natural England

ARCADIS Design & Consultancy for natural and built assets

working on behalf of

highways england

Highways England CDF

Technical Note HE548643-ARC-GEN-A585-TN-EN-2005

Project	**A585 Windy Harbour to Skippool**	Date	**39 November 2016**
Subject	**ECOLOGY SURVEY SUMMARY**	Ref	**HE548643-ARC-GEN-A585-TN-EN-2005 Version 3.0**
Author	Kate Burrows		

Table of Contents

Prepared by	Kate Burrows	Date	
Checked by	David Hourd	Date	
Approved by	Elena Vrabie	Date	

Revision Status	Amendments	Date
1.0	Issued to Highways England	12 August 2016
2.0	Issued to Highways England	31 October 2016
3.0	Approved for issue by Highways England	9 November 2016

1 ECOLOGICAL SURVEY SUMMARY

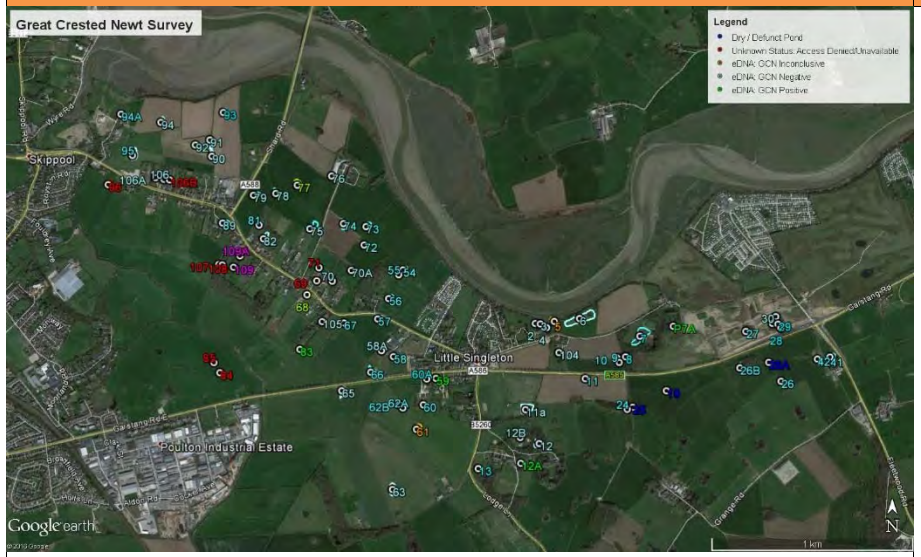
1.1 A585 Windy Harbour to Skippool

1.1.1 The two tables below set out the following:

- Table 1-1 - ecological receptors where further surveys are not deemed necessary. Such receptors may have been scoped out during the desk based study, field survey or because in-built mitigation/compensation can reduce the 'worse-case' impact to a satisfactory level; and,
- Table 1-2 - ecological receptors that require further investigation in order to determine value/presence/abundance and impacts associated with the Scheme. It should be noted that the spatial extent of the survey areas reported may be reduced if a preferred option is identified before the surveys commence.

Ecological Receptor and Baseline Information	Conclusions and Justification
Aquatic Flora, Aquatic Invertebrates and Fish There are a number of water features within the study area. The River Wyre passes to the north (approximately 300 m away at its closest point) and Main Dyke passes to the south (approximately 60 m away at its closest point). In addition, there are a number of unnamed ditches, drains and ponds and the Scheme has the potential to severe five unnamed ditches/drains and destroy three ponds. The desk based study did not highlight any records of notable aquatic invertebrates or fish within the study area. Several species of notable aquatic flora was identified; however, these were situated within statutory and non-statutory designated sites, away from the Scheme/impacted water features.	The presence of notable aquatic invertebrates, aquatic flora and fish within the impacted water features is considered unlikely based on the lack of records but cannot be ruled out. Nevertheless, appropriate mitigation will be developed to reduce significance effects through best practice and compensation, and by avoiding works to such features during periods of particular sensitivity. Minor adverse impact anticipated at worse.
Terrestrial Invertebrates The desk study identified many records of butterfly and moth species within the search area. None have been recorded thus far within the footprint of the options. The Scheme predominately impacts upon intensively cultivated and grazed pasture land that is considered unlikely to support a significant invertebrate assemblage. Field margins are minimal and hedgerows are largely species poor but these habitats (particularly those with an unmanaged understorey/ground flora) do provide suitable habitat.	The loss of suitable habitats and thus an adverse impact on terrestrial invertebrates is a potential outcome of the Scheme. Nevertheless, the habitats associated with each of the Options are likely to be of Low Value or below for terrestrial invertebrates. Appropriate mitigation will be developed to reduce impacts through compensation (i.e. habitat creation). Minor adverse impact anticipated at worse.

Table 1-1: Ecological receptors where further investigation is not deemed necessary

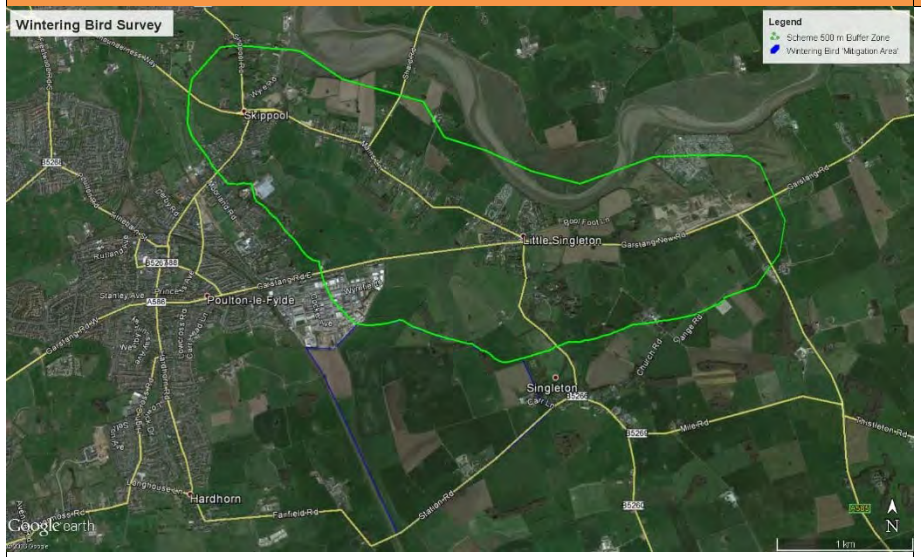
Survey Location	Species / Feature Baseline Information	Recommended Survey/Action	Survey Timing
	**Great Crested Newts** The desk study did not highlight the presence of any records with terrestrial connectivity to the site. It is proposed that surveys are limited to ponds within 250 m of the proposed route corridor. The rationale requires detailed justification: Great Crested Newts tend to be present at increasingly low density the further one looks from ponds, and the task of detecting and capturing them becomes more problematic. Further from ponds, there is a corresponding reduction in the scale of impact on populations. Natural England prefer a proportionate and risk-based approach, and thus provide guidance on reasonable survey boundaries. The Great Crested Newt Mitigation Guidelines (English Nature, 2001) explain that ponds up to around 500 m from a development might need to be surveyed. The decision on whether to survey depends primarily on how likely it is that the development would affect newts using those ponds. For developments resulting in habitat loss at distances over 250 m from the nearest pond, they advise that careful consideration is given as to whether a survey is appropriate. Surveys of land at this distance from ponds are normally appropriate when all of the following conditions are met: (a) maps, aerial photos, walk-over surveys or other data indicate that the pond(s) has potential to support a large great crested newt population, (b) the footprint contains particularly favourable habitat, especially if it constitutes the majority available locally, (c) the development would have a	**Presence/Absence Surveys** Undertake at least 4 visits between mid-March and mid-June with at least 2 visits in peak season (usually mid-April to mid-May). Survey should include all ponds where access was denied/unavailable, that were dry and where an inconclusive eDNA result was recorded (i.e. total of 15 ponds). **Population Size Class Assessment** Undertake at least 6 visits between mid-March and mid-June with at least 3 visits in peak season (usually mid-April to mid-May). Survey should include all ponds where the eDNA results were positive and any further ponds where great crested newts are detected during the above presence/absence survey.	Mid-March and mid-June 2017

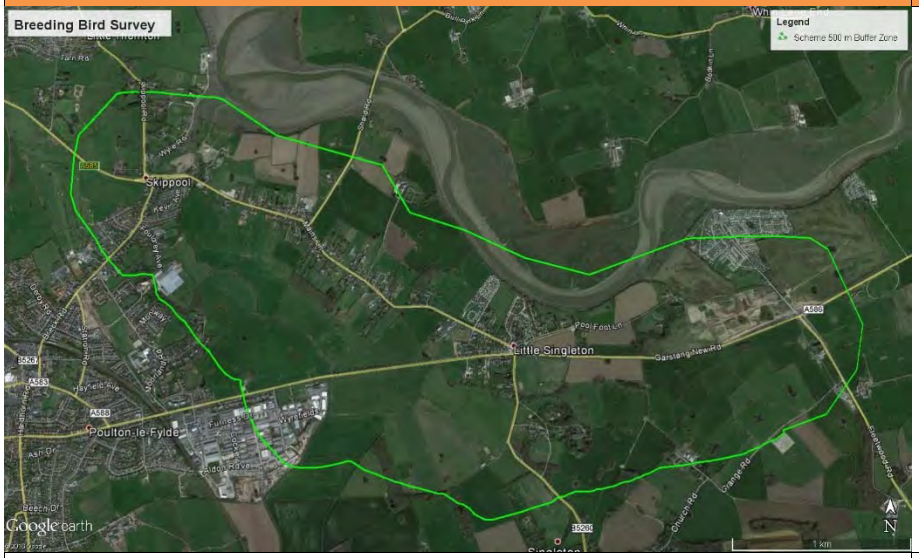
Survey Location	Species / Feature Baseline Information	Recommended Survey/Action	Survey Timing
	substantial negative effect on that habitat, and (d) there is an absence of dispersal barriers. Based on the information obtained (from the above desk based study, the Phase 1 Habitat survey and Habitat Suitability Index results), it is reasonably unlikely that a large population will be supported by the development footprint of either Option; Option O1 does not contain particularly favourable habitat and for the most part Option S does not either; and the existing A585 and associated roads do, to varying degrees, provide barriers to dispersal. Therefore, for both Options, the survey of ponds greater than 250 m appears disproportionate/unnecessary. Nevertheless, the Great Crested Newt Mitigation Guidelines (English Nature, 1981) state that the following aspects should be considered when interpreting survey results to assess overall site importance (i.e. site status assessment): • Quantitative: the number and size of populations; • Qualitative: nature of the habitats and the population – how typical or unusual are they? Does breeding occur on site? • Functional: how does the site contribute to the connectivity or fragmentation of populations in the area (are newts on the site part of a wider metapopulation?); and, • Contextual: the local significance of the population, and its relation to wider great crested newt status. The functional (and to a lesser degree the contextual) assessment can under certain		

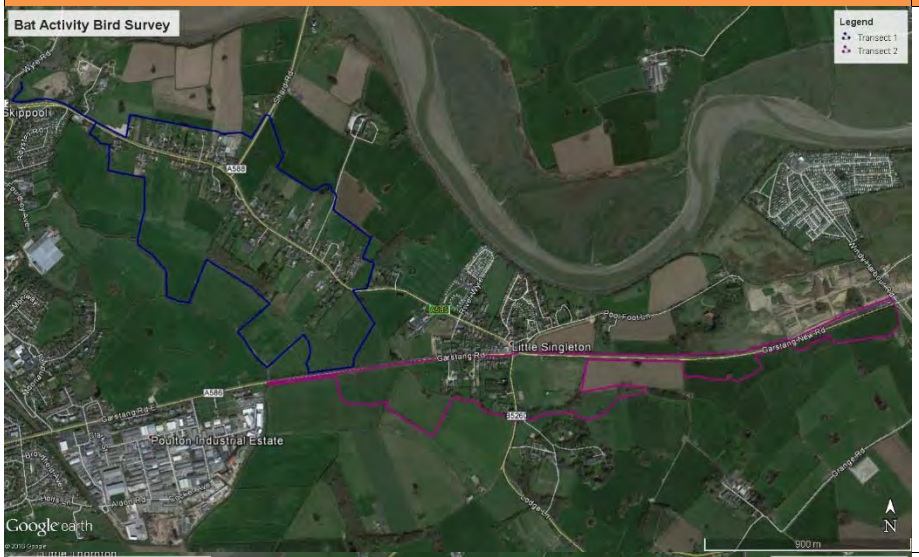
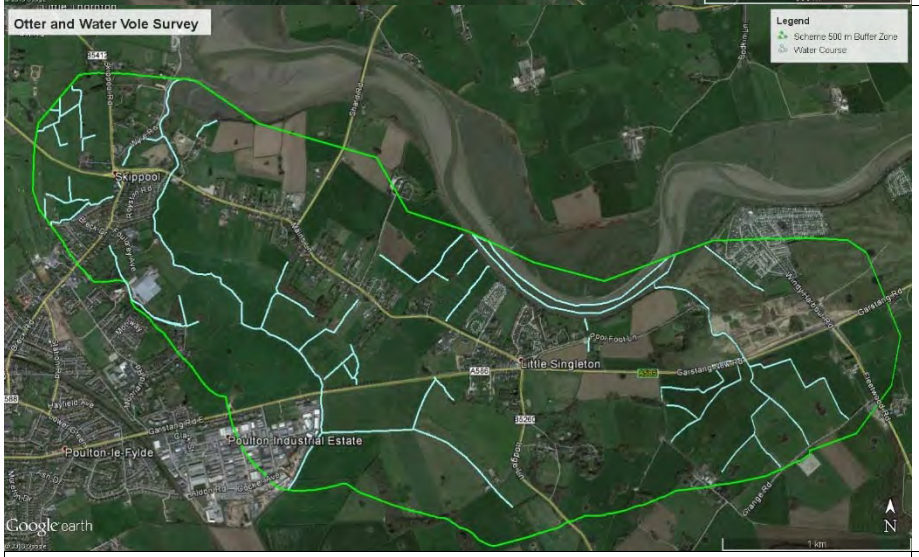
Survey Location	Species / Feature Baseline Information	Recommended Survey/Action	Survey Timing
	circumstances, dictate the size of the survey area. All roads inhibit great crested newt movements to some degree. However, great crested newts do cross roads when circumstances dictate a need to (such as ponds close to roads or severing historic dispersal pathways), or when the population is sufficiently large to support wide range dispersal. The existing landscape is already fragmented by the A585 and associated road networks. Consequently, the functional importance of most ponds within the study area is restricted and this allows several ponds to be scoped out of further detailed survey. A total of 106 ponds were identified within 500 m of the Scheme. Ponds were typically associated with agricultural fields, occasionally within small copses and several were associated with residential gardens. Of these, the following were scoped out of occupancy survey: • The Windy Harbour Junction is a wide modern junction that is considered to be a barrier to amphibian dispersal. • P32-40 were scoped out on the bases of a lack of terrestrial connectivity, particularly as they were all situated greater than 250 m from the Scheme. • P97 and P98 are also terrestrially isolated from the Scheme due to the presence of Skippool Road and Wyre Road. • P1, P53 and P52 are associated with the River Wyre Caravan Park. They		

Survey Location	Species / Feature Baseline Information	Recommended Survey/Action	Survey Timing
	are terrestrially isolated from the Scheme due to the presence of the A585. • The agricultural land associated with Pointer House and Singleton Grange (i.e. north of Grange Road/west of Fleetwood Road) is largely unsuitable for Great Crested Newts (and other amphibians) with potential resting places limited to hedgerows and small copses. Given the close proximity of the Scheme to the A585 in this area and because no ponds or particularly favourable terrestrial habitats are effected by the Scheme in this area, a 250 m survey area was considered more appropriate in this area. Subsequently, 12 ponds in this area were initially scoped out (P14-18, P20-23 & P43-45). However, great crested newt presence was established in P7A and P12A. Further investigation is required to determine whether there is connectivity between these ponds and thus, P14 and P15 will be included within the 2017 surveys. All other ponds within 500 m have been surveyed this year or will be included in the 2017 surveys. This includes P84 to 88 which were unsafe to survey as they had bulls in the fields during the eDNA surveys; P32, 69, 71, 96, 106B, 107, and 108 that were situated within residential dwellings and were not surveyed either because access was refused or the residents could not be contacted.		

Survey Location	Species / Feature Baseline Information	Recommended Survey/Action	Survey Timing
	A total of 81 ponds were identified within 250 m of the Scheme options. Environmental DNA surveys of the majority of these ponds was conducted in 2016: The status/results of the ponds are summarised below: 1) eDNA: GCN Negative – 60 ponds; 2) eDNA: GCN Positive – 6 ponds; 3) eDNA: GCN Inconclusive – 2 ponds; 4) Dry/Defunct Ponds – 3 ponds; 5) Unknown Status: Access Denied/Unavailable – 10 ponds.		
	**Reptiles** A few records of common lizard were identified during the desk based assessment; these were situated >1 km away. Much of the pasture land is intensively cultivated and grazed with little in the way of field margins and is therefore largely unsuitable for reptiles. However, hedgerows (particularly those with an unmanaged understorey/ground flora) provide some suitable habitat, particularly for dispersal to/from pockets of semi-improved neutral grassland, which could support reptiles.	**Presence/Absence Survey** Due to the large scale of the site, it is not feasible to survey all potentially suitable habitats within the study area. It is instead proposed to target areas considered most likely to contain Reptiles. The chosen areas are distributed across the Scheme. The results will either provide confidence in absence or highlight local presence and approximate distribution. A mitigation strategy may be required if reptiles are confirmed to be present and impacts are unavoidable.	April to October 2017

Survey Location	Species / Feature Baseline Information	Recommended Survey/Action	Survey Timing
	**Wintering Birds** Morecambe Bay is situated in close proximity to the Scheme and land affected by the Scheme options may be functionally linked.	**Wintering Bird Survey** 1) Weekly visits between September to November for autumn passage in 2016 and 2017 - Weekly count visits are advised given the high turnover of birds during migration; 2) 2 surveys per month between October 2016 to March 2017 and October 2017 to March 2018 for wintering; 3) Weekly visits between March to mid-May in both 2016 and 2017 for spring passage - Weekly count visits are advised given the high turnover of birds during migration. The surveys will cover different tide states and include dawn and dusk to account for birds flying to and from feeding or roosting areas. Observations will be made in as wide a range of weather conditions as possible. The specific survey methodology would involve recording waterfowl feeding and roosting areas from vantage points (VP) over fixed sessions of three hours. The survey area would encompass an area within 500 m of the route corridor, shown on the adjacent figure. Up to six vantage point locations may be required initially. This is due to the relatively flat local topography, and the presence of several copses, and built-up areas that prevent long range views over parts of the survey area. It may be possible to scale this back if it becomes clear, during the early part of the survey season, that there are large parts of the study area that are unsuitable for waterfowl (as may be the case, judging from records provided by Fylde Bird Club).	October 2016 to March 2017 and October 2017 to March 2018

Survey Location	Species / Feature Baseline Information	Recommended Survey/Action	Survey Timing
	**Breeding Birds** The desk based study identified large numbers of records of protected/notable bird species that may be present within the survey area.	**Breeding Bird Survey** Methodology will follow BTO guidance and include three survey visits following a transect survey in April, May and June Precise transect routes are yet to be confirmed but will include habitats within 200 m of the Scheme options.	April to June
Bats – Roosting Location TBC.	**Bats - Roosting** No known roosts are situated within the Scheme area. Habitat suitability to support roosting bats has largely been completed and there are many opportunities within nearby trees and buildings/structures.	1) Finalise habitat suitability and map location of potential roost sites following provision of topographical survey detailing actual tree losses (i.e. identify exactly what potential roost sites will be affected). 2) Roost presence/absence surveys (either climbed inspections or emergence/re-entry surveys) to follow on trees affected. 3) Undertake roost verification surveys (emergence and re-entry), if necessary.	September 2016 April and October (peak between May and September) 2016/17.

Survey Location	Species / Feature Baseline Information	Recommended Survey/Action	Survey Timing
	**Bats – Activity** Multiple habitats identified with the potential to support foraging and/or commuting within survey area and within Scheme options footprint.	**Bat Activity Surveys** Proposed survey effort based on Good Practice Guidelines (Collins, 2016) for moderate suitability habitat and includes: 1) One transect survey visit per month with at least one of the surveys comprising a dusk and pre-dawn (or dusk to dawn) within one 24-hour period; and, 2) The deployment of an automated detector at two locations per transect. Data to be collected on five consecutive nights per month. Proposed transect routes for the Scheme is highlighted on adjacent aerial imagery.	April to October 2017.
	**Otter and Water Vole** The study area comprises a network of water courses that may support otter and/or water vole.	**Otter and Water Vole Survey** Field survey to follow best practice and include all water courses within 500 m of the Scheme options (as illustrated on the adjacent aerial image). Given that the suitability of habitat for water voles can change markedly over the course of the breeding season, affecting the distribution and apparent population size, two survey visits will be undertaken: one in the first half of the season (mid-April to the end of June) and one in the second half of the season (July to September inclusive). These visits will be undertaken at least two months apart.	April to September 2017
Area TBC	**Badger** The Scheme options footprint and surrounding area provides suitable habitat for the species.	**Badger Survey** Survey area to include areas within the land required for the construction of the Proposed	2017 (sub-optimal: May to October)

Survey Location	Species / Feature Baseline Information	Recommended Survey/Action	Survey Timing
		Scheme option, and within a 100 m surrounding buffer. Adjacent aerial imagery highlights approximate survey area. Mitigation strategy may be required, if potential disturbance to setts identified.	
Area TBC	**Protected Flora / Habitats** The Scheme predominately impacts upon intensively cultivated and grazed pasture land that is considered unlikely to support notable habitats or a significant flora assemblage. Nevertheless, Priority Habitats (namely woodland and hedgerows, which may also be *Important* as per the criteria specified within the Hedgerows Regulations 1997) are present within survey area and within Scheme options footprint.	**Phase 2 Habitat Survey** To be confirmed following preferred Option selection.	2017

Table 1-2: Ecological receptors where further investigation will be undertaken

Kate Burrows

[redacted]

From: Knowles, Elizabeth D (NE) [mailto:Elizabeth.Knowles@naturalengland.org.uk]
Sent: 28 February 2017 10:54
To: Neil Madden <Neil.Madden@arcadis.com>
Cc: Kate Burrows <Kate.Burrows@arcadis.com>; Nick Henderson <Nicholas.Henderson@arcadis.com>; David Hourd <David.Hourd@arcadis.com>; Stewart Lowther <Stewart.Lowther@arcadis.com>; 'Tristram.Bardrick@highwaysengland.co.uk' <Tristram.Bardrick@highwaysengland.co.uk>
Subject: RE: DAS2055 - A585 Windy Harbour to Skippool, Lancashire – 177663
Importance: High

Hi Neil,

This advice is being provided as part of Natural England's Discretionary Advice Service. Highways England has asked Natural England to provide advice upon:

- Advice on potential impacts on designated or proposed designated sites,
- Advice on scope of biological survey methodology or draft biological survey methodology,
- Advice on the information for a draft Habitats Regulations Assessment (HRA).

This advice is provided in accordance with the undefined scope contract quotation and agreement no. DAS2055 dated 03 March 2016.

Further to your email received on 12 December 2016 regarding the GCN surveys and bird surveys, I have received the following comments from the Wildlife Adviser regarding the GCN surveys;

Q1:

- As there is mention of two options for this proposal, it is presumed that things are still some way from works being implemented on site. It will be important to consider the age of any survey data when there is a clearer understanding of the work programme. If there is a significant gap between now and the construction occurring, then it may well be necessary for updated surveys to be carried out.
- P1, P52 and P53 are 40m-170m from the O1 route option (500m from S1). If option O1 is followed, all works in this section will be within the existing road structure and the nearest modifications of the road would be 300m to the east and south. The road is an existing barrier to dispersal to the south. However, if temporary amphibian fencing (TAF) is not used, it will be necessary to ensure a precautionary approach is in place to ensure that no suitable resting or hibernation opportunities are provided within the site that may encourage GCN into the works footprint.
- P36-40 and P48-51 – No surveys have been proposed (as this is poor quality habitat consisting of old landfill and improved grassland) but works will run through centre of this pond network. It's unclear just how unsuitable this habitat may be and as no eDNA surveys have been carried out, the presence of a GCN population is unknown. However, the works are only 60m from the nearest pond. The proposed modifications are minor and will take place within the road but what are these 'minor' works? It may be that a precautionary works approach could be used here but more information would be needed before it could be determined that no survey of these ponds is necessary.
- 8 ponds have not been surveyed due to private access issues but all are recommended for survey in 2017. If access cannot be gained, there may be a need for precautionary mitigation/a precautionary works approach. All evidence of the attempts to gain access needs to be included in any formal licence submission.
- Natural England are clear that the use of habitat suitability index scores (HSI) are not sufficient in themselves to discount ponds from a survey. In the case of P7A which has a below average score, but was positive from the eDNA survey, it is not considered acceptable at this stage to assess this as a likely false positive. There are many occasions where ponds with below average HSI scores are found to support GCN.

- The level of survey required in relation to each pond i.e. whether presence/absence or population size class assessment, needs to be determined from the guidance set out in the GCN mitigation licence method statement based on the distance from the ponds and the amount of habitat being affected by the development.

Q2 – I am happy with your approach to the wintering bird surveys.

Please let me know if you require any further information.

Liz

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We are here to secure a healthy natural environment for people to enjoy, where wildlife is protected and England's traditional landscapes are safeguarded for future generations.

In an effort to reduce Natural England's carbon footprint, I will, wherever possible, avoid travelling to meetings and attend via audio, video or web conferencing.

[redacted]

From: Knowles, Elizabeth D (NE) [mailto:Elizabeth.Knowles@naturalengland.org.uk]
Sent: 28 November 2016 15:54
To: Neil Madden <Neil.Madden@arcadis.com>
Cc: Kate Burrows <Kate.Burrows@arcadis.com>; Nick Henderson <Nicholas.Henderson@arcadis.com>; David Hourd <David.Hourd@arcadis.com>; Stewart Lowther

<Stewart.Lowther@arcadis.com>; Tristram.Bardrick@highwaysengland.co.uk
Subject: RE: DAS2055 - A585 Windy Harbour to Skippool, Lancashire – 177663

Hi Stewart,

This advice is being provided as part of Natural England's Discretionary Advice Service. Highways England has asked Natural England to provide advice upon:

- Advice on potential impacts on designated or proposed designated sites,
- Advice on scope of biological survey methodology or draft biological survey methodology,
- Advice on the information for a draft Habitats Regulations Assessment (HRA).

This advice is provided in accordance with the undefined scope contract quotation and agreement no. DAS2055 dated 03 March 2016.

Further to your email below, I have the following comments to make on the Ecology Survey Summary (Ref. HE548643-ARC-GEN-A585-TN-EN-2005 Version 3.0, Arcadis, 39 November 2016);

Aquatic Flora, Aquatic Invertebrates and Fish
Satisfactory in principle

Terrestrial Invertebrates
Satisfactory in principle

Great Crested Newts
You need to clarify where the 500m is being taken from. I would expect you to take the 500m measurement from the extent of the scheme boundary and not the centreline of the proposed road – offline option – ie. bypass to the south.

It is also not clear how many ponds are left to be surveyed – this should be clarified.

Reptiles
Satisfactory in principle

Wintering Birds
Your recommendations of weekly bird surveys do not correlate with what we have previously agreed and what is in your email below. This should be corrected.

Breeding Birds
Satisfactory in principle

Bats – Roosting
Satisfactory in principle

Bats - Activity
It is important to ensure that the transect/activity surveys capture bats flying across the current road as this will help to determine the type of mitigation required to ensure that severance is catered for within the design proposals. You could look at the survey effort for the A556 proposal because your Option 1 (bypass to the south) is also an offline proposal.

Otter and Water Vole
Consideration needs to be given as to when to carry out otter surveys. They can be present all year round but it is best to survey them when the vegetation is not too high. It is important that the water courses are not surveyed for at least two weeks following a flood event as field signs may have been washed away.

Badger
Satisfactory in principle

Protected Flora / Habitats
Satisfactory in principle

Please let me know if you require any further clarification.

Liz

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[redacted]

APPENDIX C

Transboundary Screening

PINS Advice Note 7: Environmental Impact Assessment: Preliminary Environmental Information, Screening and Scoping states that within the Scoping Report the applicant may wish to provide a completed transboundary screening matrix (as presented in PINS Advice Note 12: Regulation 24 of the EIA Regulations) dealing with the effect of the Project on other EEA States.

This matrix would facilitate the consideration by the Secretary of State under Regulation 24 of the EIA Regulations of whether the Scheme is likely to have significant effects on the environment in these states. Table C-1 identifies where in this Scoping Report the relevant information is presented to inform the transboundary screening exercise.

Table C-1: Information to Inform a Decision regarding Likely Significant Effects on Another EEA State

Transboundary Screening Criteria	Commentary and Location of Relevant Information in the Scoping Report
Characteristics of the development	Information about the characteristics of the Scheme are described in Chapter 2: Description of the Scheme.
Geographical area	The Scheme would not require any physical works in any area under the jurisdiction of any other EEA State and based on the current understanding there would be no significant environmental effects on any other EEA State.
Location of development	The Scheme lies within the county of Lancashire within the boroughs of Fylde and Wyre. Details of the location of the Scheme are provided in Chapter 1: Introduction and shown on Figure 1.1 at Appendix A. The nearest EEA state is the Republic of Ireland which is approximately 200km to the west.
Cumulative impacts	There are a number of other schemes being developed near the Project and these are identified in Chapter 17: Cumulative Effects and shown on Figure 17.1 at Appendix A. Potential cumulative impacts would be assessed within the ES.
Carrier	The pathways by which impacts could be spread are via air, land and water. No impact pathways to any member states via air, land or water have been identified.
Environmental importance	All environmental resources that are identified as potentially experiencing significant environmental effects all lie within the UK. Details of relevant

Transboundary Screening Criteria	Commentary and Location of Relevant Information in the Scoping Report
	environmental receptors and their importance are provided in Sections 7 to 17 of this Scoping Report.
Extent	Based on the information collated to date as part of the scoping exercise, no significant effects are identified that could impact on another EEA Member State. This position would be clarified as the environmental topic assessments proceed and confirmed in the ES.
Magnitude	
Probability	
Duration	
Frequency	
Reversibility	

APPENDIX D

Table D1: Cumulative Schemes

Type of Development	Development Details	Status	Programme	Approx. Distance from the Scheme
Tier 1(a)				
Highway (Drawing Reference 13)	06/13/0528 Renewal of planning permission 6/06/0589 for the construction of the Broughton Bypass and improvements to existing highways. Broughton, Preston, Lancashire	Under Construction	Opening 2017	13.7km south east
Tier 1(b)				
Residential (Drawing Reference 1)	15/00576/OUTMAJ Outline application for a residential development of up to 90 dwellings, provision of public car park and associated open space and landscaping. Great Eccleston, Preston, Lancashire	Consented	Unknown	3.3km east
Commercial (Drawing Reference 2)	15/00554/FULMAJ Demolition of existing buildings and erection of a retail store, car park, access onto Garstang Road East and Clark Street and associated works. Poulton-Le-Fylde, Lancashire	Consented	Unknown	800m south west
Solar Farm – Energy (Drawing Reference 3)	15/0380 Installation of a 4.5 MW Solar Farm and associated infrastructure including PV Panels, Mounting frames, Substation, Cabin, CCTV cameras, fencing integral access roads and landscaping. Weeton with Preese, Poulton-Le-Fylde	Consented	Unknown	3.4km south
Solar Farm – Energy	15/0337	Consented	Unknown	7.9km south

Type of Development	Development Details	Status	Programme	Approx. Distance from the Scheme
(Drawing Reference 4)	Installation of a 4.9MW Solar Farm and associated infrastructure including PV panels, mounting frames, inverter and pole mounted CCTV cameras and fencing. Westby with Plumptons, Lancashire			
Solar Farm – Energy (Drawing Reference 5)	15/0329 Construction of 4.9MW Solar Development to generate renewable electricity (Cooper House Solar Farm), to include the installation of solar panels, underground cabling, inverter/transformer stations, DNO and client sub-station, spare parts container, landscaping and other associated works including connection to the electricity distribution network. Freckleton, Preston, Lancashire	Consented	Unknown	9.4km south east
Residential (Drawing Reference 15)	16/01043/OULMAJ Outline application for the erection of up to 130 dwellings with means of access off Holts Lane (layout, landscaping, scale and appearance reserved), following demolition of existing buildings (re-submission of 16/00233/OULMAJ) Land Off Holts Lane Poulton-Le-Fylde Lancashire	Consented	Unknown	1.2km south west
Residential (Drawing Reference 6)	15/00298/LMAJ Erection of a residential development comprising 519 dwellings (11 five-bed dwellings, 166 four-bed dwellings, 242 three-bed	Consented	Unknown	500m south

Type of Development	Development Details	Status	Programme	Approx. Distance from the Scheme
	dwellings, 100 two-bed dwellings) including 30% affordable homes, landscaping and associated infrastructure including two new access points off Garstang Road East and new footpaths. Poulton-Le-Fylde, Lancashire			
Preesall Underground Gas Storage Facility (Drawing Reference 8)	Underground Gas Storage facility at Preesall, Lancashire, which includes an Interconnector Pipeline to the National Grid Transmission System at Nateby, 12km to the east, and a brine discharge pipeline extending 2.3km offshore from Rossall, Fleetwood.	Consented	Unknown	2.6km north
Highways (Drawing Reference 9)	Preston Western Distributor (PWD) Connecting the M55 via a link road south to the A583 including an access road East to West with Preston.	Consented	Construction 2017 / 2018	12.3km south east
Highways (Drawing Reference 10)	Associated with PWD road M55 Junction 2 proposals - The PWD will connect to the M55 in the north via a new Junction 2.	Consented	Unknown	10.1km south east
Highways (Drawing Reference 11)	Associated with the PWD this East West Link Road will allow the new PWD to connect with Preston via an East to West access road.	Consented	Construction 2016 / 2017	12.3km south east
Highways (Drawing Reference 12)	The Cottam Link Road. Associated with the PWD this will allow the PWD to connect with Cottam Way and provide a link for a new Cottam Park Rail Station.	Consented	Unknown	12.1km south east
Tier 1(c)				

Type of Development	Development Details	Status	Programme	Approx. Distance from the Scheme
Residential (Drawing Reference 16)	17/00050/REMMAJ Reserved matters application for the erection of 160 dwellings with associated works Land Off Lambs Road Thornton-Cleveleys Lancashire	Pending Decision	Unknown	1.2km north west
Residential (Drawing Reference 17)	16/00742/OUTMAJ Outline application for the erection of up to 108 no. dwellings (Use Class C3) with all matters reserved except for access, which will be off Brockholes Crescent following demolition of numbers 61 & 63 Brockholes Crescent Land Off Brockholes Crescent Poulton-le-Fylde Lancashire	Pending Decision	Unknown	1.3km south west
Mixed Use (Drawing Reference 7)	11/0221, 11/0314 Outline application for development of a maximum of 1400 residential dwellings, 20 hectares of Class B2 general industrial/ Class B8 storage and distribution, Class D1 primary school, two local neighbourhood centres (Classes A1, A2/ A3), Class A4 drinking establishment, Class D1 health centre, Class D1 community building, vehicle access onto Preston New Road and Mythop Road with associated road infrastructure, car parking, public open space, sports pitches, allotments, the retention and improvement of natural habitats, watercourse, ponds, reed beds and	Unknown	Completion after 2028	5.4km south

Type of Development	Development Details	Status	Programme	Approx. Distance from the Scheme
	hedgerows and landscape features. Westby with Plumptons, Blackpool			
Tier 3				
Hillhouse Enterprise Zone Power Station (Drawing Reference 18)	Up to 900MW Megawatt electrical (MWe) Power Plant primarily using combined cycle gas turbine (CCGT) technology with optional additional open cycle gas turbine (OCGT) technology with optional additional open cycle gas turbine (OCGT) technology to help address the fluctuating energy demands of UK power consumption. The project will include a new gas pipeline, Above Ground Installations at St Michael's on Wyre and Hillhouse, and an electrical cable to Stanah substation.	The application is expected to be submitted to the Planning Inspectorate Q2/Q3 2017	Unknown	1.9km north west
Fleetwood – Thornton Area Action Plan (Drawing Reference 14)	The Fleetwood – Thornton Area Action Plan establishes a clear vision and planning framework for development of Fleetwood and Thornton over the next 15-20 years and is a very important consideration in any decision on planning applications in the area. It includes areas identified for residential, industry and community facilities.	Adopted by Wyre Council on 19th September 2009	Unknown	1.9km north west