

**A585 Windy Harbour to Skippool**

**UA009921**

**Preliminary Environmental Information Report**

## A585 Windy Harbour to Skippool Improvement Scheme

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### PRELIMINARY ENVIRONMENTAL INFORMATION REPORT

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## ABBREVIATIONS

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
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CIRIA	Construction Industry Research Information Association
CL:AIRE	Contaminated Land: Applications in Real Environments
CO <sub>2</sub>	Carbon Dioxide
CRTN	Calculation of Road Traffic Noise
DBA	Desk-Based Assessment
DCO	Development Consent Order
Defra	Department for Environment Food and Rural Affairs
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges



Abbreviation	Definition
EA	Environment Agency
EAR	Environmental Assessment Report
ECow	Ecological Clerk of Works
EEA	European Economic Area
EFT	Emission Factor Toolkit
EIA	Environment Impact Assessment
END	Environmental Noise Directive
ES	Environmental Statement
EU	European Union
FRA	Flood Risk Assessment
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
JNCC	Joint Nature Conservation Committee
km	Kilometre (Unit of Measurement)
LAQM	Local Air Quality Management
LCA	Landscape Character Assessment
LiDAR	Light Detection and Ranging
LLFA	Lead Local Flood Authority
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
NIA	Noise Important Area

Abbreviation	Definition
NN NPS	National Policy Statement for National Networks
NO <sub>2</sub>	Nitrogen Dioxide
NOEL	No Observed Effect Level
NO <sub>x</sub>	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
PRoW	Public Rights of Way
pSAC	Possible Special Area of Conservation
pSPA	Potential Special Protection Area
rMCZ	Recommended Marine Conservation Zone
RIGS	Regionally Important Geological Site
SAC	Special Area of Conservation
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
UXO	Unexploded Ordnance
VDM	Variable Demand Modelling
WFD	Water Framework Directive

Abbreviation	Definition
Zol	Zone of Influence
ZTV	Zone of Theoretical Visibility

## 1 INTRODUCTION

### 1.1 Background to the Scheme and 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, Lancashire. Between 2015 and 2017, work was undertaken to develop and assess options to address these issues. On 24 October 2017, Highways England announced that an offline 'southern' bypass solution between the two junctions was the preferred solution (hereafter referred to as the 'Scheme'). The location of the Scheme is presented on Figure 1.1 at Appendix A.
- 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 This Preliminary Environmental Information Report (PEIR) has been prepared at an early stage in the pre-application process and provides a description of the Scheme, outlines the alternative options that were considered and presents a preliminary review of the likely environmental effects of the Scheme and how they could be mitigated. Consultees and the local community can then respond to the information in this report and make representations. Representations received can then be taken into consideration in progressing the Scheme design and preparing the ES that will accompany the DCO application. Further details on the EIA process are provided in Section 4 of this PEIR.
- 1.1.4 In accordance with Regulation 8(1) and as part of the first stage in the EIA process on 9 November 2017, Highways England requested PINS to provide its opinion on the scope of the information to be included in the ES for the Scheme. This was subsequently received on 20 December 2017 and this PEIR takes into account, where relevant, the Scoping Opinion received from PINS <https://infrastructure.planninginspectorate.gov.uk/projects/north-west/a585-windy-harbour-to-skipool-improvement-scheme/?ipcsection=docs>.

### 1.2 The Consenting Process

- 1.2.1 The legal structure within which the DCO application will be determined is governed by the Planning Act 2008. The Planning Act 2008 required the preparation of new policy to inform decisions made on NSIPs in England and sets out the principles that should be applied in the assessment of DCO applications.
- 1.2.2 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 used by PINS and the SoS to make a decision on all major road and rail projects. The NN NPS is informing the design of the Scheme and the EIA process.

### **1.3 Consultation and the Purpose of this Report**

1.3.1 The purpose of this PEIR is to enable consultees (both specialist and non-specialist) to understand the likely environmental effects of the Scheme and to help inform their consultation responses during the pre-application stage. This report does not intend to provide the same level of detail as the forthcoming ES.

Under the Planning Act 2008, there are two separate formal stages of pre-application consultation:

- Section 42 with prescribed consultees (e.g. Natural England, Environment Agency, Historic England), local authorities, landowners and others with interests in land
- Section 47 consultation with the local community in accordance with the Statement of Community Consultation (SoCC)

1.3.2 For the purposes of this Scheme both of these consultation stages will run in parallel.

1.3.3 This PEIR will be submitted to the prescribed consultees, local authorities, and landowners and will be made available to members of the public and the wider community. At this stage not all of the detailed survey or assessment work required for the ES has been completed. This PEIR therefore presents the environmental information and potential effects of the Scheme as we currently understand them to be in a simplified format. A significant amount of survey work has been completed to-date to inform the preparation of the PEIR including ecological surveys, baseline landscape and visual surveys and a ground investigation. Further guidance is provided in PINS Advice Note 7 (2017) regarding the PEIR.

1.3.4 Consultees are encouraged to respond to the information contained in this PEIR and other reports (see Section 1.5). The responses received will be taken into account in developing the Scheme design that will be assessed in the ES.

1.3.5 The final ES will be published as part of the DCO application to PINS in Autumn 2018.

### **1.4 Structure of this PEIR**

Within the EIA Regulations, “preliminary environmental information” means information referred to in Regulation 14(2) which:

- Has been compiled by the applicant
- Is reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of the development (and of any associated development)

1.4.1 Regulation 14(2) of the EIA Regulations is presented in Table 1-1 and outlines where in this PEIR the information is presented.

**Table 1-1: Introduction - Requirements of Regulation 14(2) of the EIA Regulations and Details of their Location within this PEIR**

Requirements	Location within the PEIR
<i>(a) a description of the proposed development comprising information on the site, design, size and other relevant features of the development.</i>	Section 2
<i>(b) a description of the likely significant effects of the development on the environment.</i>	Sections 5 to 14
<i>(c) a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment.</i>	Sections 5 to 15
<i>(d) a description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment.</i>	Section 3
<i>(e) a non-technical summary of the information referred to in (a) to (d).</i>	See separate Non-technical summary
<i>(f) any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and the environmental features likely to be significantly affected.</i>	Sections 1 to 15

## 1.5 Responding to Consultation

1.5.1 Comments made at all stages of the consultation process will be recorded and carefully considered by the Scheme team. Should other potentially viable options be raised during consultation, their relative merits will be considered and reported on. How comments received have shaped and influenced the Scheme will be reported to PINS in a Consultation Report prepared by the Applicant which will accompany the DCO application as required by Section 37(3) (c) of the Planning Act 2008.

## 1.6 Pre-Application Consultation Programme

1.6.1 Pre-application consultation is an important requirement for applications for DCOs. It allows for potential issues to be raised, taken into account and, where possible, addressed before the application is submitted for examination. During the consultation Highways England will seek comment on:

- The Scheme (including its alignment)
- Information on the possible environmental effects of the Scheme, as understood at the time and detailed in this PEIR

- 1.6.2 The consultation will run from 19 March 2018 to 4 May 2018.
- 1.6.3 Throughout the formal consultation Highways England will provide relevant written information at specific suitable public viewing places. The written information available to view will include:
- The SoCC
  - The PEIR
  - The Consultation Brochure
- 1.6.4 Open exhibitions where people will be able to view our proposals, talk to our Scheme team representatives and record their comments will be held at:
- Singleton Village Hall – Friday 23 March 2018 – 1pm – 8pm  
– Saturday 7 April 2018 – 10am – 4pm
  - Wyre Council Offices – Tuesday 10 April 2018 – 3pm – 8pm
  - Fleetwood Nautical College – Wednesday 11 April – 2pm – 8pm



## 2 THE SCHEME

### 2.1 Background to the Scheme

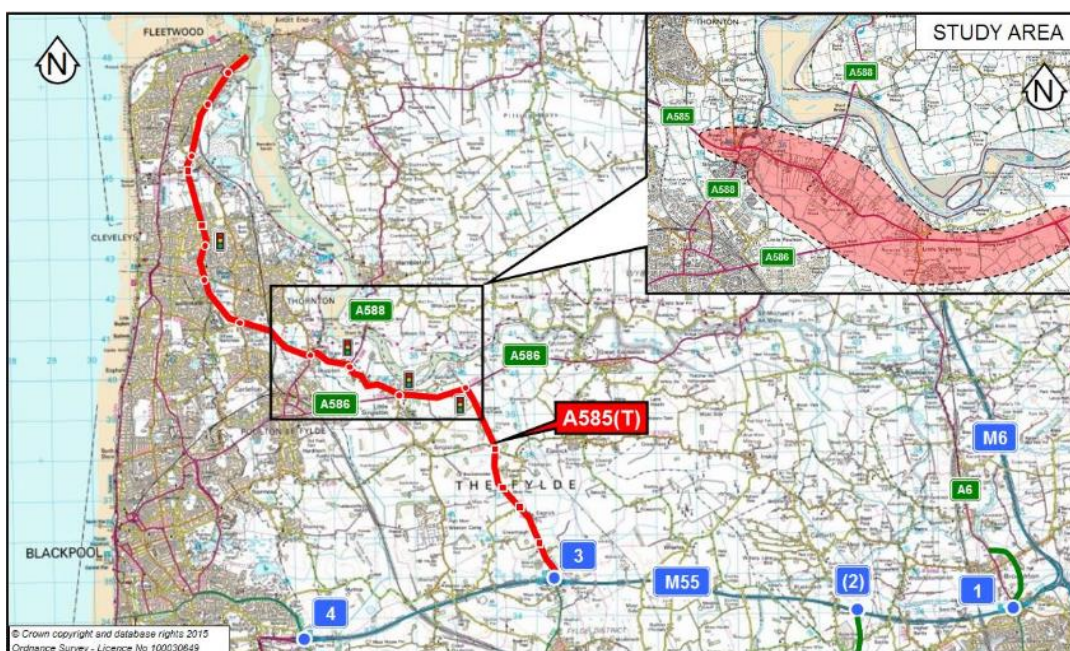
2.1.1 The Department for Transport (DfT) outlined in its Road Investment Strategy (RIS) Statement 2014, its aims for the Strategic Road Network (SRN). Part of this was to identify key investment needs on the SRN so Highways England developed a Route Based Strategy (RBS) to focus on those routes in the 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. 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 Overview

2.2.1 The A585 Windy Harbour to Skippool Improvement Scheme is to provide an improvement to approximately 4.8km of the existing single carriageway A585 Trunk Road route that extends in a generally north-west direction for about 19km between M55 Junction 3 and the port of Fleetwood at the northern end of the Fylde Peninsula as shown on Plate 2-1 below and in more detail on Figure 1.1 at Appendix A.

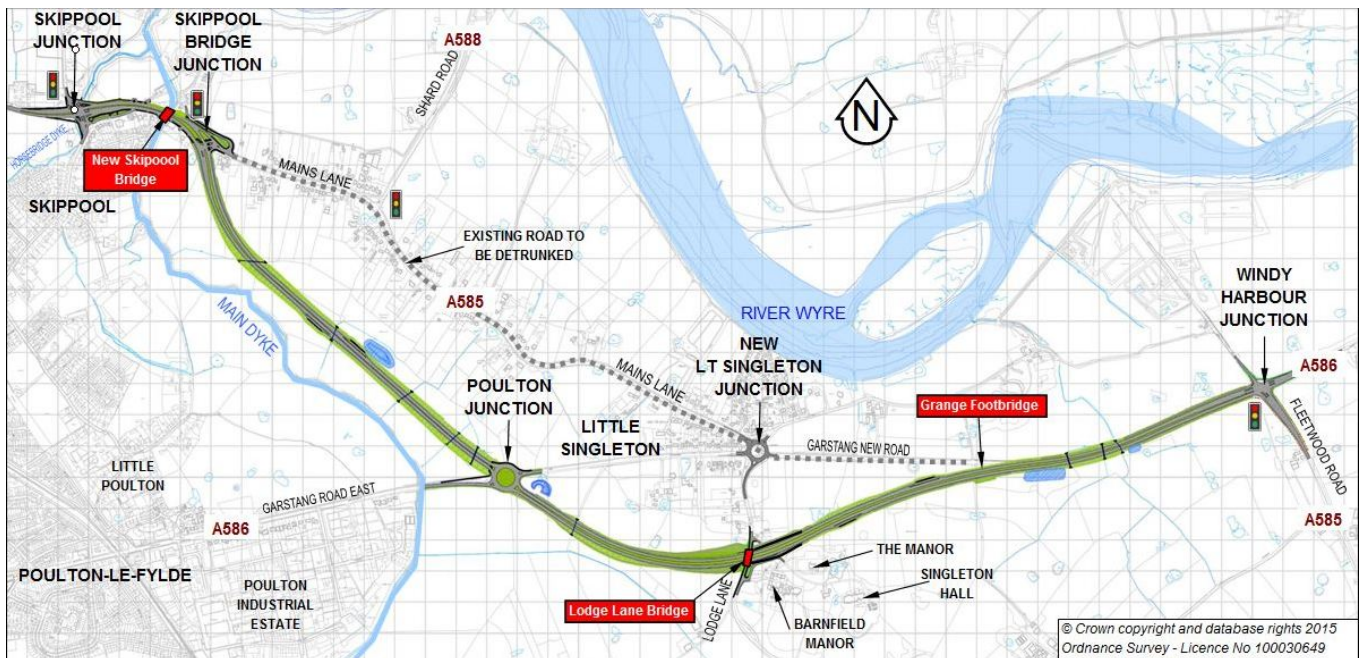
**Plate 2-1: A585(T) Route and study area**



The Scheme includes the following components (refer to Plate 2-2 and in more detail on Figure 1.2 at Appendix A).



**Plate 2-2: The Scheme**



- 4.86km (3 miles) of new two lane dual carriageway bypass connecting Windy Harbour Junction to Skippool Junction
- Four new junctions including
  - Conversion of Skippool Junction to a traffic signal-controlled crossroads with A588 Breck Road and B5412 Skippool Road
  - Skippool Bridge Junction in the form of a three-arm traffic signal-controlled junction with the existing Mains Lane
  - Poulton Junction in the form of a four-arm roundabout connecting to A586 Garstang Road East
- Conversion of Little Singleton Junction (also known as Five Lane Ends) to a roundabout
- Four new structures including:
  - Skippool Bridge
  - Lodge Lane Bridge
  - Skippool Clough Culvert (Note: this is dependent on the results of a condition survey. It may need strengthening as it passes below the new Skippool junction)
  - Grange Footbridge
- Three construction compounds – two in the western end and one in the eastern end – refer to Figure 1.2 at Appendix A.
- Works for temporary access, temporary lay-down and work areas and ancillary works

## 2.3 Scheme Alignment

### Skippool Junction to Skippool Bridge Junction

- 2.3.1 Working from west to east, the Scheme would start at the eastern end of Amounderness Way with the re-construction of the Skippool Junction from a priority roundabout to a 4-way traffic signal-controlled crossroads junction with designated turning lanes and improved provision for pedestrians and cyclists through phased timings and an increased number of crossing points. To allow full use of existing frontage accesses east of this junction, its layout would also permit U-turns only from/to the east.
- 2.3.2 Passing under the existing footprint of Skippool Junction roundabout is Skippool Clough Culvert carrying Horsebridge Dyke northwards towards the River Wyre at Skippool Creek. This culvert would be retained in its present form under the new junction.
- 2.3.3 From the new Skippool junction the alignment follows the same direction as the existing A585 Mains Lane but as a dual two lane all-purpose carriageway across the Main Dyke watercourse to a new traffic signal-controlled junction (Skippool Bridge Junction) which is the start of the bypass section. 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 that would be retained on both sides of the road.
- 2.3.4 Pedestrian and cycling facilities would be provided between these junctions and these would connect to Mains Lane.

### Skippool Bridge

- 2.3.5 The existing bridge supporting the A585 over Main Dyke would be demolished and a new wider bridge would be constructed to accommodate the new dual carriageway. This would be undertaken in two main stages to maintain continual traffic usage with the northern half of the new bridge being constructed first.
- 2.3.6 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. Before the existing bridge could be demolished, the utilities apparatus within the existing bridge would need to be transferred into the northern half of the new bridge and traffic diverted onto the new bridge.

### Skippool Bridge Junction to Poulton Junction

- 2.3.7 Skippool Bridge junction would be the connection between the new bypass and the existing Mains Lane including a realignment of Old Mains Lane eastwards to join Mains Lane clear of the main junction. This new junction would be traffic signal controlled and would include designated turning lanes and provision for pedestrians and cyclists through phased timings and dedicated crossing points. As at the proposed Skippool Junction, to allow full use of existing frontage accesses west of this junction, its layout would also permit U-turns only from/to the west.

- 2.3.8 East of Skippool Bridge Junction to dual two-lane bypass commences and would be subject to the national speed limit (70mph) and would head in a south easterly direction.
- 2.3.9 The bypass would have no specific provision for pedestrians or cyclists as the former Mains Lane and Garstang Road East would be safer to use once most of the traffic has diverted to the bypass. In addition, the bypass would be designated as a clearway connecting to the existing clearway on A585 Amounderness Way to the west.
- 2.3.10 The route reaches a high point of 11.2m Above Ordnance Datum (AOD) 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 that would be culverted until it eventually reaches a low point at 6.8mAOD about half a mile southeast of Skippool Bridge junction. The alignment then climbs gently towards A586 Garstang Road East.
- 2.3.11 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.
- 2.3.12 Midway along the bypass between Skippool Bridge Junction and Poulton Junction, laybys would be provided to both carriageways. Near the eastbound layby a wetland area would be provided to receive and treat the highway drainage of this section of the bypass.

#### **Poulton Junction to Windy Harbour Junction**

- 2.3.13 A new priority four-arm roundabout junction (Poulton Junction) would provide a connection to the A586 Garstang Road East allowing access to Poulton-le-Fylde and Little Singleton. All roads on the immediate approach to the roundabout would be subject to a 50mph speed limit.
- 2.3.14 Crossing facilities for pedestrians and cyclists would be provided across the western (bypass) arm of the roundabout to connect to the existing footway on the north side of Garstang Road East.
- 2.3.15 Immediately north-east of the Poulton Junction a wetland would be provided to deal with highway drainage water collected from the part of the bypass east of Poulton Junction.
- 2.3.16 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 B5260 Lodge Lane that would be carried over the bypass on a new bridge along the existing road alignment. 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 lengths of retaining wall on both sides of the bypass.
- 2.3.17 The Lodge Lane cutting would sever the existing access road to Singleton Hall,

Singleton Manor and The Coach House. A replacement access road would be provided south of the bypass with a connection to Lodge Lane immediately south of the new Lodge Lane bridge.

- 2.3.18 Lodge Lane would be temporarily diverted westwards for the construction of the bridge but, on completion, would be along the line of the existing road.
- 2.3.19 About 200m east of the retained cutting at Lodge Lane Bridge, the Scheme would continue to rise on shallow embankment to the high point of the alignment at 18.3mAOD and to pass over an existing 24-inch asbestos cement water main. Laybys would be provided close to this location for both carriageways.
- 2.3.20 East of the high point, the bypass would continue on shallow embankment on a gentle right-hand curve to join the alignment of the existing Garstang New Road that would be converted to a dual carriageway for the remainder of the route to the existing Windy Harbour Junction. A new footbridge would be provided to maintain the connection of the existing public footpath (Singleton footpath No 2) that crosses the route of the bypass.
- 2.3.21 The existing footway on the north side of Garstang New Road would be upgraded to provide safe provision for pedestrians and cyclists.
- 2.3.22 Two drainage wetland areas would be provided in this section to deal with highway drainage.

#### **Little Singleton Junction and Garstang New Road**

- 2.3.23 The existing Garstang New Road west of the bypass alignment would become a no-through road but would be retained to provide part of the route for Non-Motorised Users between Windy Harbour junction and Little Singleton, access to fields and a route for existing utilities apparatus.
- 2.3.24 The existing Garstang New Road west of the bypass alignment would become a no-through road but would be retained to provide part of the route for pedestrians and cyclists between Windy Harbour junction and Little Singleton, access to fields and a route for existing utilities apparatus.
- 2.3.25 The bypass dual carriageway horizontal and vertical alignments would be designed to the 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.

## **2.4 Earthworks Design**

- 2.4.1 All junctions would be at-grade to avoid significant additional 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. 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 recent ground investigation.



- 2.4.2 The current analysis indicates that there would not be sufficient excavated material to form the proposed embankments north and south of Garstang Road East. Consequently, we have identified areas, outside the land required for the bypass, that would be suitable to excavate the material needed for the embankments. These areas, known as borrow pits, are within a field south of Little Singleton and west of Lodge Lane either side of the bypass. This location has been chosen to avoid construction traffic having to pass through Little Singleton or having to cross the existing A585 road. The excavation in the borrow pits would be up to about 3m deep but, due to sloping nature of these fields, would be reinstated to allow the land to be returned to agriculture on completion of the excavation works including regrading to a slope of about 1 in 15 and provision of new field drainage.
- 2.4.3 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.

## 2.5 Highways Structures

- 2.5.1 Table 2-1 below is a list of all the structures proposed for the southern bypass option.

**Table 2-1: Scheme Description - List of Structures**

Name of Structure	Details of Proposed Works
Skippool Clough Culvert	Changes to highway alignment above the culvert Alterations to an existing access chamber
Skippool Bridge	Demolition of existing structure and construction of a twin deck single 14.1m span bridge over the Main Dyke waterway
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 141.80m new retaining wall.
Lodge Lane South Retaining Wall	Construction of 196m new retaining wall.
Grange Footbridge	Construction of a new single span (36.0m) footbridge over the bypass with ramps and stair accesses

- 2.5.2 A short version of a tunnel (described as a land bridge) about 80m longer than Lodge Lane bridge 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.

## **2.6 Highways Drainage**

- 2.6.1 At this stage of the design, only the principle of the drainage system has been developed.
- 2.6.2 In principle, the drainage system would limit discharge from the highway to existing rates to avoid increasing the risk of flooding. Also, the drainage system would be designed to prevent pollution from the highway entering nearby watercourses and the wider area.
- 2.6.3 Existing field ditches would be retained or diverted as part of the bypass construction and these are located at A, B, C, D, E, F and G (refer to Figure 1.2 at Appendix A) crossing the bypass through new or extended culverts. The new culverts would be 1.5m diameter with provision to allow mammals such as otters to pass through the culverts.
- 2.6.4 A number of highway wetland areas would be constructed to provide storage, containment and treatment of water run-off from the bypass. These wetland areas would discharge into adjoining watercourses.

## **2.7 Highways Lighting**

- 2.7.1 Lighting would be required at junctions only and no lighting would 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.
- 2.7.2 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 requirements.

## **2.8 De-Trunking**

- 2.8.1 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 further agreement and the evolving Scheme design):
- Traffic calming measures
  - Enhancements to pedestrian and cycle provisions
  - Alterations to Shard Road traffic signal junction
  - Alterations to Little Singleton junction
  - Changes to the street lighting system (subject to age and condition) including possible upgrade to Light Emitting Diode (LED) lighting or changes to the lighting along Garstang New Road if it is to be decommissioned but retained for pedestrians and cyclists

- Modifications to all road signing
- Detailed condition survey of all drainage assets
- Possible resurfacing of the carriageway subject to a detailed condition survey

## **2.9 Provision for Pedestrians and Cyclists**

2.9.1 It is not proposed to include specific provision for pedestrians and cyclists along the off-line sections of the bypass as it is considered that improvements to the facilities along the existing roads would better serve the expected demand between communities.

2.9.2 Where the proposed route would affect the existing footways and cycleways along the existing A585 and the 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. Two footpath routes are affected by the Scheme.

- Footpath 2 (Singleton) crosses the bypass route about 1km west of Windy Harbour Junction and a footbridge (Grange Footbridge) over the bypass is proposed as the permanent solution. During construction, a safe route through the construction site would be provided.
- Footpath 1 (Poulton) becomes Footpath 11 (Singleton) and joins the existing A585 at Skippool running alongside the western bank of Main Dyke. It then joins Footpath 6 (Singleton) via Old Mains Lane on the northern side of the A585. The permanent solution to link the footpaths would be to provide a short diversion at the south-west corner of the proposed New Skippool Bridge and then to use the pedestrian crossing facilities of the proposed Skippool Bridge Junction. During construction, a safe route using the existing and proposed footways within the construction site would be provided.

2.9.3 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.

## **2.10 Flood Risk Assessment**

2.10.1 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 risk generated as a result of the Scheme's construction.

2.10.2 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.

- 2.10.3 The assessment carried out to-date indicates that, while the Scheme passes across areas prone to flooding, the replacement of the Skippool Bridge over Main Dyke would reduce the overall risk of flooding.

## **2.11 Construction**

- 2.11.1 Construction is anticipated to last for approximately two years and commence in Spring 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.

### **Site Compounds**

- 2.11.2 For the eastern (Little Singleton) sections of the Scheme it is suggested to have one site compound. This would allow site vehicles to come up from the Windy Harbour junction and access the offline haul road.
- 2.11.3 For the western (Skippool) section two possible site compounds are proposed; one south of A585 Amounderness Way west of Skippool Junction and the other north of the Breck Road.
- 2.11.4 The site compounds would be used for plant and material storage and welfare facilities for staff.

### **Haulage Routes and Construction Traffic Management**

- 2.11.5 Access for construction vehicles to the site would be from the trunk road network or other major local road using designated routes which would be clearly signposted. Other roads near the Scheme would be signed to prohibit construction traffic using them.
- 2.11.6 Haul routes within the Scheme area would be dictated by the balance of excavated soil and embankment fill material within the site areas. This itself would be dictated by the design of the new roads and the suitability of the excavated materials arising and for beneficial re-use.
- 2.11.7 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.

## **2.12 Demolition**

- 2.12.1 The property named West Wynds, Old Mains Lane north of Skippool Bridge junction would require demolition prior to the construction of the new Skippool Bridge.
- 2.12.2 An existing derelict barn south of Mains Lane and east of Skippool Petrol Station would require demolition prior to construction of Skippool Bridge Junction and the bypass.
- 2.12.3 The existing Skippool Bridge would be demolished as part of the widening between Skippool Junction and Skippool Bridge junction.



- 2.12.4 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.

### **2.13 Services and Utility Diversions**

- 2.13.1 Third party equipment exists which may be potentially affected by the Scheme. These include:

- Electricity North West - underground and overhead cables
- Cadent (formerly National Grid) – Gas distribution
- GTC – localised gas supply to Singleton Hall and Manor
- BT Openreach – underground and overhead cables
- United Utilities – water supply and sewers
- Thornton Facilities Management Ltd – former ICI ethylene pipeline to the Hillhouse site in Thornton Cleveleys

- 2.13.2 Appropriate diversions would be incorporated into the Scheme design and construction programme including diversions possibly carried out in advance of the main works.

### **2.14 Contaminated Land**

- 2.14.1 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.

- 2.14.2 Particular attention is required for two historic landfill sites adjacent to the Scheme. These are at 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.

- 2.14.3 Another potential source of contamination may be the numerous lime pits present in the study area which could have been infilled with contaminated material.

- 2.14.4 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.

### **2.15 Waste Management**

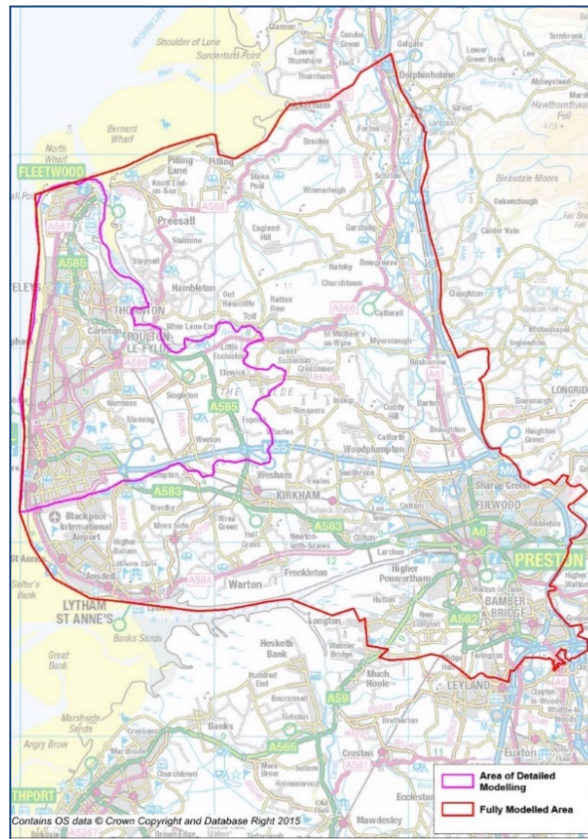
- 2.15.1 A Site Waste Management Plan (SWMP) and a Materials Management Plan (MMP) would be prepared following the protocols within the Contaminated Land: Applications in Real Environments (CL:AIRE) Definition of Waste: Development
-

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 by the Contractor prior to construction and would be secured by a Requirement in the DCO.

## 2.16 Traffic Forecasting

2.16.1 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 – see Plate 2-1.

**Plate 2-1: Geographic Traffic Model Coverage**



2.16.2 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

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

- Opening year of 2022
- Design year of 2037

2.16.4 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.

2.16.5 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)

2.16.6 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.

## **2.17 The Rochdale Envelope**

2.17.1 PINS Advice Note 9: 'Using the 'Rochdale Envelope' (2012) 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.

2.17.2 Within this PEIR, a more developed concept design (when compared with the EIA Scoping Report) 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**

#### **3.1 Background**


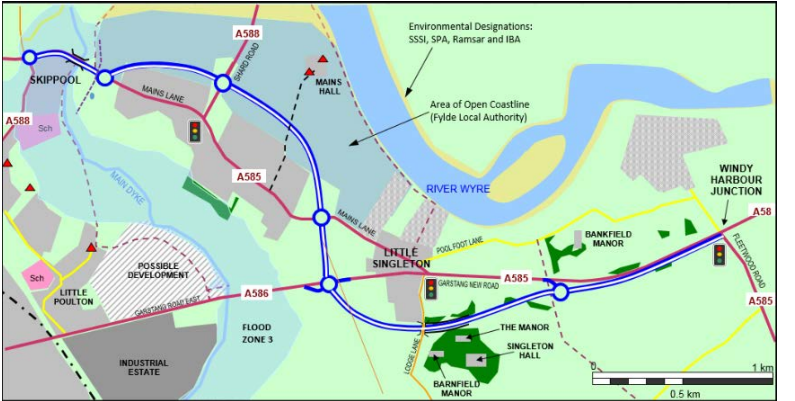
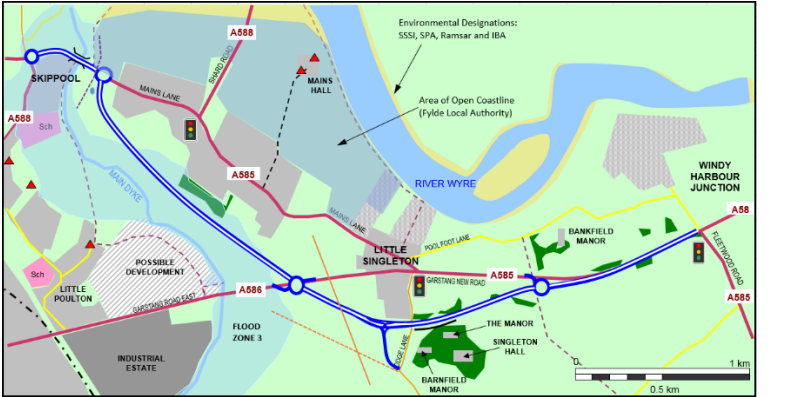
- 3.1.1 Three corridors were considered during Highways England's options stage (PCF Stages 1 and 2), online, southern and northern corridors. Five options were identified for the southern corridor (S1-S5), while two options were identified for both the northern (N1 and N2) and online corridors (O1 and 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 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 the Design Manual for Roads and Bridges Volume 11 (DMRB)<sup>1</sup>. 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 were then used at sifting workshops to help to reject options and inform the selection of the preferred option.
- 3.1.3 The preferred option was announced by Highways England on the 24 October 2017, however, within the preferred option there were a number of sub-options where a decision had yet to be made. A decision has since been made by Highways England with regard to the sub-options.
- 3.1.4 Further detail of all rejected options and sub-options is provided in Table 3-1.



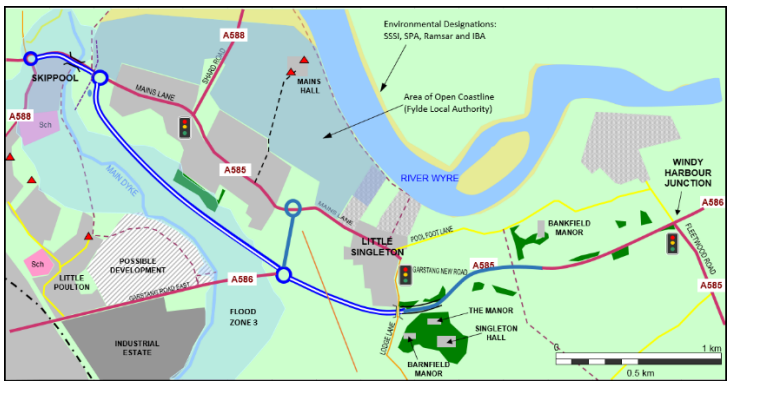
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<sup>1</sup> The DMRB Volume 11, published by Highways England and partners is the key guidance used for undertaking EIAs for highways schemes.



**Table 3-1: Alternatives – Rejected Options**

Option Name and When Rejected	Image and Summary of Environmental Effects
<p>Northern Bypass  <b>Option N1</b>                      Rejected 2016</p>	 <p>The map shows the proposed route for Option N1, highlighted in blue. It starts at Skippool, goes south on Mains Lane, then east on Pool Foot Lane, and finally east on A585 to Windy Harbour Junction. Environmental designations like SSSI, SPA, Ramsar, and IBA are shown in green. The River Wyre is shown in blue. Other features include Little Poulton, Little Singleton, Mains Hall, Bankfield Manor, The Manor, Singleton Hall, and Barnfield Manor. A scale bar indicates 0.5 km and 1 km.</p>
<p>Northern Bypass  <b>Option N2</b>                      Rejected 2015</p>	 <p>The map shows the proposed route for Option N2, highlighted in blue. It follows a similar path to Option N1, starting at Skippool, going south on Mains Lane, then east on Pool Foot Lane, and finally east on A585 to Windy Harbour Junction. Environmental designations and other features are the same as in Option N1. A scale bar indicates 0.5 km and 1 km.</p>
<p><b>Summary of environmental effects of Northern Options:</b> The northern options were considered to be located in closer proximity of the Morecambe Bay Ramsar site and SPA than other options therefore there was uncertainty whether the options were functionally linked to these sites. The northern options were also considered to have potential effects on three Grade II Listed Buildings along with more negative effects on landscape resources. No significant effects were identified with regards to the water environment.</p>	
<p>Southern Bypass  <b>Option S2</b>                      Rejected 2016</p>	 <p>The map shows the proposed route for Option S2, highlighted in blue. It starts at Skippool, goes south on Mains Lane, then east on Pool Foot Lane, and finally east on A585 to Windy Harbour Junction. Environmental designations and other features are the same as in the northern options. A scale bar indicates 0.5 km and 1 km.</p>

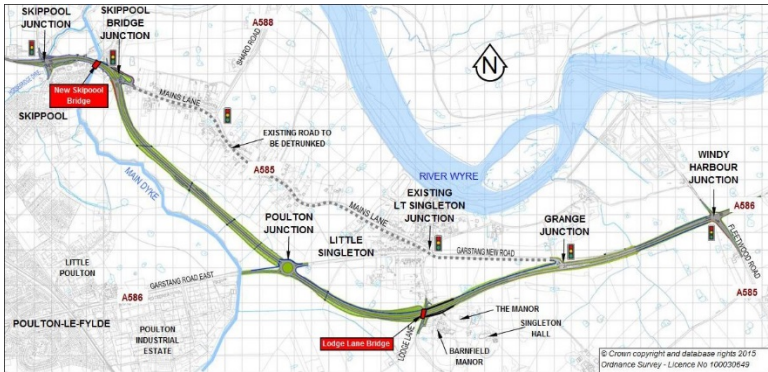
Option Name and When Rejected	Image and Summary of Environmental Effects
<p>Southern Bypass  <b>Option S3</b>                      Rejected 2016</p>	
<p>Southern Bypass  <b>Option S4</b>                      Rejected 2016</p>	
<p>Southern Bypass  <b>Option S5</b>                      Rejected 2016</p>	

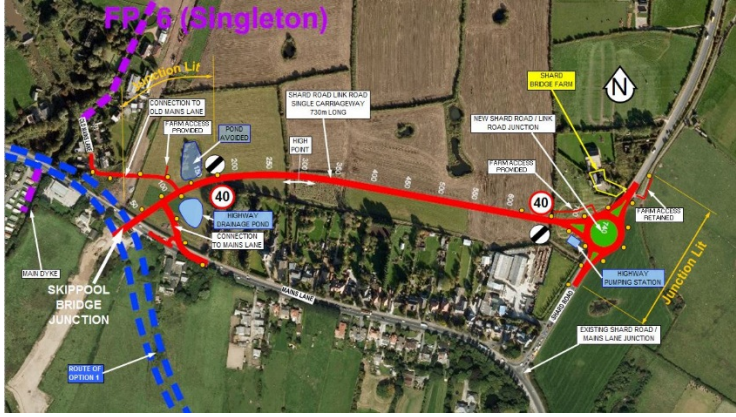
Option Name and When Rejected	Image and Summary of Environmental Effects
<p>Alternative Southern Bypass (Shown in Red)                      Rejected 2017</p>	 <p><b>Summary of environmental effects of Southern Options:</b> Environmental effects of the southern options would be the same as for the Scheme. The southern options pass through an area of Flood Zone 3, associated with Main Dyke, are potentially located on functionally linked land, may have effects on heritage assets and may result in adverse landscape effects.</p>
<p>Online Option O1                      Rejected 2017</p>	
<p>Online Option O2                      Rejected 2015</p>	



<p><b>Option Name and When Rejected</b></p>	<p><b>Image and Summary of Environmental Effects</b></p>
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**Summary of environmental effects of Online Options:** The online options would result in the least environmental effects as they would require the least land take outside the existing highway boundary. Effects on the local landscape, historic environment and water environment were all considered to be minor due to the online nature of the works. Effects on biodiversity were more uncertain due to the proximity to the Morecambe Bay Ramsar site and SPA and the potential for offline elements to be functionally linked to these sites.

<p><b>Option 1A</b> Rejected 2017</p>	
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<p><b>Southern Bypass addition of Shard Road Link</b> Rejected 2017</p>	
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**Summary of environmental effects of Shard Road Link:** The Shard Road link option would lead to increased noise and landscape impacts experienced at the rear of properties on the north side of Mains Lane. There would also be effects on agricultural land through direct land take.



## 4 ENVIRONMENTAL ASSESSMENT METHODOLOGY

### 4.1 Purpose of EIA Process

- 4.1.1 EIA is the process of compiling, evaluating and presenting environmental information in support of an assessment of all likely significant effects of a proposed development. The assessment is designed to inform the development of the Scheme and to provide decision-makers and statutory consultees with the environmental information they require during the determination of an application for consent. The process allows mitigation measures to be identified to avoid, reduce or offset significant environmental effects and incorporate them into the design of the Scheme (where appropriate). Additional mitigation measures are also designed, and commitments made to environmentally sensitive construction methods and practices.
- 4.1.2 The collation of environmental information and analysis of this information against the Scheme proposals continues throughout the Scheme's development and is recorded in the final ES which will be submitted with the application for the DCO.
- 4.1.3 The following sections provide background to the EIA work that has been completed to-date for this Scheme and also explains how this PEIR has been prepared.
- 4.1.4 The sections draw heavily upon the extensive environmental survey, desk-study and analysis that has been undertaken to-date.

### 4.2 EIA Work Completed to Date

#### Scoping

- 4.2.1 In accordance with Regulation 8(1) on 8 November 2017, Highways England requested PINS provide its opinion on the scope of the information to be included in the ES for the Scheme. To inform the PINS scoping opinion a Scoping Report was submitted by Highways England clearly outlining the intended scope of each environmental topic<sup>2</sup>. Drawing upon the scoping opinion responses received on the 20 December 2017 and the ongoing surveys and assessment work, the ES will include an assessment of the potential significant environmental effects of the Scheme. The following topics have been scoped in to the ES as individual assessment chapters. These also form the topics discussed in this PEIR (Sections 5-14):
- Air quality
  - Cultural heritage
  - Biodiversity
  - Landscape
  - Noise and vibration

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<sup>2</sup> <https://infrastructure.planninginspectorate.gov.uk/projects/north-west/a585-windy-harbour-to-skipool-improvement-scheme/?ipcsection=docs>

- People and communities
- Road drainage and the water environment
- Geology and contaminated land
- Climate
- Materials
- Assessment of cumulative effects

4.2.2 The impact of the Scheme on human health will also be covered in the ES and is covered across a number of the Sections above, namely: Air quality; Noise and vibration; People and communities; Road drainage and the water environment; and Geology and contaminated land.

#### Collation of Data

4.2.3 Table 4-1 provides a summary of key consultations and responses undertaken to date.

**Table 4-1: Environmental Assessment Methodology - Consultation Undertaken to Date during the Environmental Assessment Process**  
**Consultation Undertaken to Date during the Environmental Assessment Process**

Consultee	Type and Date of Consultation	Information Requested/Issues Discussed
Natural England	<b>Biodiversity</b> - 10/10/2016 - 20/11/2017 Multiple emails across this period.	Discussion on the scope of survey for ecological and ornithological receptors <sup>3</sup> ; the scope of the ecological assessment; and the approach to the Habitat Regulations Assessment.
EA	<b>Road Drainage and the Water Environment</b> - 07/11/17 by email	Discussed the surface water drainage strategy, with the EA making recommendations to incorporate Sustainable Drainage Systems that maximise benefits in terms of providing water quality treatment and encouraging biodiversity. EA also provided guidance on likely need for Environmental Permits for works on Main River watercourses (being the River Wyre, Main Dyke and Horsebridge Dyke).
	<b>Flood Risk Assessment</b> various dates throughout 2017	The existing EA model of the Main Dyke and Horsebridge Dyke, in addition to the Wyre estuary tidal model were requested and supplied. The EA have also provided flood defence information.

<sup>3</sup> A receptor in the context of the PEIR is an 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.

Consultee	Type and Date of Consultation	Information Requested/Issues Discussed
	<p>by email and phone</p> <p><b>Flood Risk Assessment</b>  <b>16/01/18</b>  by phone</p>	<p>The scope of the Flood Risk Assessment has been discussed and agreed including the technical methodologies to be adopted for flood flow estimation and hydraulic modelling of the key sources of flood risk (tidal and rivers).</p> <p>The EA have since approved our flow hydrology and have provided comments on our initial FRA findings.</p> <p>Discussion regarding the results of our assessment of the flood risk implications of constructing the Scheme embankment prior to the proposed new crossing of the Main Dyke.</p>
Wyre Borough Council	<p><b>Landscape –</b>  20/09/17 -  Discussion with Planning Officer regarding selection of Representative Viewpoints</p>	<p>Response – <i>“The one suggestion I have is a view point north of Skippool roundabout along Wyre Way which is promoted as a recreational route around Wyre Estuary. On your plan you show a footpath along the estuary and through the green belt. An appropriate view point might be the southernmost point before the footpath turns west”.</i></p> <p>Action: Viewpoint has since been added into the assessment as requested.</p>
	<p><b>Landscape –</b>  06/12/17 -  Discussion with Planning Officer regarding selection of locations for Photomontages with PEIR Viewpoints</p>	<p>Response – The planning officer has not yet been able to respond to this request.</p> <p>Action: This will be followed up.</p>
	<p><b>Noise and Vibration -</b>  14/12/17 2017 by email</p>	<p>Discussed Long term noise monitoring locations with Environmental Health Officer (EHO)</p> <p>EHO requested an additional monitoring location at Singleton Lodge. He also pointed out that construction work was occurring on the nearby Blackpool to Preston railway line and advised doing the monitoring outside of the construction programme.</p>

Consultee	Type and Date of Consultation	Information Requested/Issues Discussed
Fylde Borough Council	<b>Landscape –</b> 20/09/17 - Discussion with Landscape Officer regarding selection of Representative Viewpoints	Response – <i>“Your selection of viewpoints is reasonably comprehensive and will enable a good overview of the visual effects of the road to be assessed. However I think there are three views listed below which may warrant further investigation.</i> <ol style="list-style-type: none"> <li>1. View south and west from Garstang Road to the west of Little Singleton.</li> <li>2. View north west from Carr Lane in Singleton village.</li> <li>3. View north west from Grange Road, west of the A585 (Fleetwood Road).”</li> </ol> Action: Viewpoints added as requested
	<b>Landscape –</b> 20/09/17 - Discussion with Landscape Officer regarding selection of Representative Viewpoints	Response – <i>“Thank you for your consultation email. I am generally satisfied that the locations you have identified for photomontages will give a true impression of the proposed scheme. However, I would recommend a couple of additions:</i> <ol style="list-style-type: none"> <li>1. Either include Viewpoint 5 as an additional item or replace Viewpoint 4.</li> <li>2. Include Viewpoint 16.”</li> </ol> Action: Based on feedback we added VP 16 and replaced VP5, with VP4.
	<b>Noise and Vibration -</b> 14/12/17 2017 by email	Discussed Long term noise monitoring locations with EHO.  EHO requested an extra monitoring location at Singleton Lodge. He had no other concerns.
Lancashire County Council	<b>Road Drainage and the Water Environment -</b> 01/11/17 by email	In their role as Lead Local Flood Authority, requested comments on the proposed surface water drainage strategy and guidance on the consenting regime for works to Ordinary watercourses.

4.2.4 Talking with consultees and collecting additional data will continue as part of the environmental assessment.

### 4.3 Approach to the PEIR

#### Structure of Each Topic Section

4.3.1 For each environmental topic the following is reported:

- Summary of the baseline information obtained to date
- Other baseline information to be obtained and surveys to be undertaken and limitations – there are a number of surveys currently ongoing (ecological,

noise, archaeological and agricultural) that will further improve our understanding of the baseline environment and inform our future assessment of the Scheme and the design of mitigation.

- Receptors potentially affected
- Potential effects and additional mitigation measures

### **Identifying Potential Effects and Mitigation Measures**

4.3.2 Owing to the preliminary nature of this assessment, detailed assessment criteria are not reported in each environmental topic assessment. Rather the environmental topic assessments provide an indication of those effects that are considered likely to occur as a result of the Scheme based on current knowledge of the environment and the Scheme components. The environment topic assessments seek to identify:

- Extent of the impact (geographical area and size of the affected population)
- The magnitude and complexity of the impact
- The probability of the impact
- The duration, frequency and reversibility of the impact

4.3.3 For each potential environmental effect identified, mitigation is proposed to avoid, reduce or offset the effect. Environmental mitigation and design has been an integral part of the Scheme design process to-date with a number of measures having been implemented to reduce the Scheme's adverse environmental effects. These are considered to be embedded mitigation measures and include:

- Reduction of the Scheme footprint
- Siting of compound buildings and material storage areas away from property.
- Avoidance of key features such as designated sites, footpaths, listed buildings (e.g. the Ice House)
- Landscaping including replacement and new tree, shrub and hedgerow planting along with bunding to reduce noise and visibility of the Scheme
- Minimising the loss of existing landscape elements and the footprint of construction areas
- Provision of measures to control water pollution and methods to drain surface water from the site effectively
- Reduced extents of lighting and its form to minimise light spill
- Installing underpasses and specially adapted culverts to increase the permeability of the Scheme for protected species and reduce the barrier effect
- Provision of bird mitigation measures to provide alternative habitats for birds
- Design of Scheme to reduce the number of landowners impacted and to reduce the number of ecological features such as hedgerows that are impacted
- Provision of borrow pits to reduce the current shortage of materials required to construct the Scheme therefore reducing the amount of material required to be brought in by a third party

- Ensuring the Scheme complies Highways England's Licence (April, 2015) within paragraphs 4.2g, 4.2h (principles of sustainable development) and 5.2. The Scheme should also comply with Highways England's Biodiversity Plan, published in June 2015, which details the aims and obligations it has to deliver as part of the Government's RIS in terms of biodiversity. Highways England is also expected to ensure the design of their road schemes reduces 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

4.3.4 Additional mitigation is presented within each specific environmental topic Section.

#### **Cumulative Effects with Other Schemes**

4.3.5 The EIA Regulations require an assessment of direct, indirect and cumulative effects with other projects and plans. Cumulative effects with other schemes have been assessed in line with PINS Advice Note 17 (December 2015). Intra Project Cumulative Effects

4.3.6 Intra-project cumulative effects occur where a single receptor is affected by more than one source of impact arising from different aspects of the Scheme. For example, an intra-project effect would be where a local residential property is affected by dust, noise and traffic disruption during construction, with the result being a greater nuisance than each individual effect alone. These types of effects are considered in Section 14.

4.3.7 The following Sections (5-14) present the preliminary environmental information for each of the topics scoped in.



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## 5 AIR QUALITY

### 5.1 Introduction

- 5.1.1 This Section presents the assessment of the air quality impacts associated with the Scheme. Outlined in this chapter are the existing environmental conditions related to air quality, details of any surveys to be undertaken and the potential effects and mitigation measures as a result of the Scheme assessment.
- 5.1.2 This Section should be read in conjunction with Figure 5.1 – Air Quality Management Areas and Local Authority Air Quality Monitoring, Figure 5.2 – Highways England Air Quality Monitoring Locations, Figure 5.3 – Air Quality Study Area and Figure 5.4 – Air Quality Representative Receptor Locations at Appendix A.

### 5.2 Existing Environmental Conditions

- 5.2.1 The Scheme is located within the administrative boundaries of Fylde Borough Council and Wyre Borough Council. As required by the Environment Act 1995, the local authorities have undertaken review and assessment of air quality within their boroughs – all local authority monitoring locations within the air quality study area are presented on Figure 5.1 at Appendix A.

#### **Fylde Borough Council**

- 5.2.2 A review of the information held on Defra's website, and the Fylde Borough Council website indicates that no Air Quality Management Areas (AQMA) have been designated within Fylde.
- 5.2.3 Fylde Borough Council undertakes air quality monitoring for nitrogen dioxide (NO<sub>2</sub>) using diffusion tubes at multiple locations across the Borough. Recent air quality monitoring data 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 Air Quality Strategy (AQS) objectives (40µg/m<sup>3</sup>) from the monitoring results.
- 5.2.4 The maximum recorded concentration in 2015 (the year used in the assessment to represent existing base year concentrations) was 27.5µg/m<sup>3</sup> which is well below the AQS objective.

#### **Wyre Borough Council**

- 5.2.5 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 (refer to Figure 5.1 at Appendix A). The Chapel Street AQMA in Poulton-le-Fylde was declared by Wyre Borough Council in 2009 for the exceedance of the annual mean NO<sub>2</sub> AQS objective as a result of traffic emissions, congestion and the locality of buildings preventing dispersion of air pollutants.
- 5.2.6 Wyre Borough Council undertakes air quality monitoring for NO<sub>2</sub> using diffusion tubes at multiple locations across the borough. Recent air quality monitoring results contained within the Wyre Air Quality Progress Reports and the Updating and

Screening Assessments do not report any exceedances of the AQS Objectives (including the monitoring within the AQMA).

- 5.2.7 The maximum recorded concentration in 2015 (the year used in the assessment to represent existing base year concentrations) was 32.9µg/m<sup>3</sup> which is well below the AQS objective.

### **Highways England Air Quality Monitoring**

- 5.2.8 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 5.2 at Appendix A). The six months of monitoring indicated that concentrations of NO<sub>2</sub> were well below the AQS objective/EU Limit Value of 40µg/m<sup>3</sup>, with the maximum concentration recorded being 26µg/m<sup>3</sup> on Fleetwood Road approximately 250m south of the Windy Harbour Junction.

- 5.2.9 The air quality monitoring data from the local authorities and Highways England illustrates that air quality concentrations do not exceed the AQS objectives/EU limit Values for the main traffic related pollutant, NO<sub>2</sub>.

### **Defra EU Compliance Reporting**

- 5.2.10 Defra is responsible for reporting on the UK's 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. The affected road network (ARN) (roads that trigger the criteria in DMRB HA 207/07, Paragraph 3.12 of a change of more than 1,000 annual average daily traffic (AADT), 200 Heavy Duty Vehicles (HDV) and 10kph as a result of 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 within the air quality study area:

- The A585 from its junction with Shard Road to its junction with the B5412 (Skippool junction)
- The A588 Breck Road from Skippool junction to the A586 Garstang Road East
- A586 Garstang Road West and Garstang Road East
- A583 Preston New Road

- 5.2.11 The maximum NO<sub>2</sub> concentration predicted by Defra for the opening year 2022 for any of the links in the PCM Model, therefore the Scheme is considered unlikely to impact on the UK's ability to comply with the Directive in the opening year.

## **5.3 Other baseline information to be obtained / surveys to be undertaken and limitations**

- 5.3.1 Monitoring previously undertaken by Highways England and ongoing local authority monitoring data provides a good indication of baseline conditions throughout the study area. Due to the extensive baseline data available indicating concentrations



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well below the AQS objectives, it is considered that no further monitoring is required.

## 5.4 Potential Effects and Mitigation Measures

### Aspects Scoped into and out of the Assessment

5.4.1 The following has been scoped into the EIA on the basis that potentially significant effects cannot be ruled out at this stage:

- Effects during construction covering construction phase dust
- Effects during operation covering air quality effects (NO<sub>2</sub> and PM<sub>10</sub>) during operation on sensitive receptors

5.4.2 PM<sub>2.5</sub> has been scoped out of the assessment in accordance with DMRB.

5.4.3 The potential effects of the Scheme during construction and operation and the measures proposed to manage them are outlined below.

#### Construction

5.4.4 A construction phase dust assessment has been completed in accordance with DMRB. There are sensitive receptors located within 200m of the construction site boundary and, therefore, have the potential to be affected by fugitive construction dust emissions. Industry best practice mitigation measures would be implemented to ensure that construction dust does not result in a significant effect. Mitigation measures might include: positioning dust generation activities as far away as possible from sensitive receptors, seeding or covering long-term stockpiles and damping down surfaces. Regular inspections would assist in monitoring the success of any mitigation measures employed. These measures / commitments would be included within and managed through the CEMP.

#### Operation

5.4.5 An operational phase assessment has been completed in accordance with DMRB. Pollutant concentrations have been predicted for the following scenarios and compared against the AQS objectives:

- Base Year 2015 (model verification using 2015 monitoring data)
- Do Minimum 2022 (Opening Year without the Scheme)
- Do Something 2022 (Opening Year with the Scheme)

5.4.6 The concentrations of air pollutants NO<sub>2</sub> and Particulate Matter less than 10 microns in diameter (PM<sub>10</sub>) have been modelled using the dispersion model Atmospheric Dispersion Modelling System (ADMS Roads). The model uses detailed information regarding traffic flows on the local road network together with meteorological data to predict pollutant concentrations at specific receptor locations. The modelling determines whether the Scheme is likely to lead to exceedances of the relevant AQS objectives and therefore have the potential to lead to a significant impact on air quality.

5.4.7 The full extent of the affected road network (ARN) is illustrated in Figure 5.3 at Appendix A. The ARN is defined by the change in traffic flows on the local road

network as a result of the Scheme.

- 5.4.8 A selection of 41 representative receptors potentially sensitive to changes in air quality, as defined in DMRB HA207/07, have been identified throughout the study area of 200m from the ARN. The location of these receptors is outlined in Table 5-1 and shown on Figure 5.4 at Appendix A.
- 5.4.9 The Base year (2015), Do Minimum and Do Something (2022) NO<sub>2</sub> concentrations at these receptors are presented in Table 5-1. The annual mean NO<sub>2</sub> concentrations reported for the Do-Minimum and Do-Something (2022) have been adjusted in accordance with the advice in IAN 170/12v3. This is to ensure that the opening year modelled predictions are not too optimistic.

**Table 5-1: Air Quality - Predicted Annual Mean NO<sub>2</sub> Concentrations at Receptors**

Receptor		Base Year 2015 Annual Mean NO <sub>2</sub> Concentrations (µg/m <sup>3</sup> )	LTT Adjusted 2022 Annual Mean NO <sub>2</sub> Concentrations (µg/m <sup>3</sup> )		Difference between Projected Do Minimum and Do Something (µg/m <sup>3</sup> )
			Do Minimum	Do Something	
R1	Residential property on Fleetwood Road	27.4	22.4	24.3	1.9
R2	Bankfield Manor Care Home on Pool Foot Lane	9.9	7.8	7.9	0.1
R3	Residential property on Lodge Lane	11.5	8.8	12.4	3.6
R4	Residential property at junction of Garstang Road and Lodge Lane	17.6	14.0	9.8	-4.2
R5	Residential property on Garstang Road	14.2	11.3	9.1	-2.2
R6	Residential property at junction of Mains Lane Pool Foot Lane	24.3	19.6	9.4	-10.2
R7	Residential property at junction of Station Road and Lodge Lane	11.3	8.6	8.5	-0.1
R8	Residential property on Mains Lane	12.4	9.8	7.9	-1.9
R9	Residential property on Mains Lane	19.6	15.6	9.6	-6.0
R10	Residential property on Garstang Road West	19.7	15.2	15.7	0.5

Receptor		Base Year 2015 Annual Mean NO <sub>2</sub> Concentrations (µg/m <sup>3</sup> )	LTT Adjusted 2022 Annual Mean NO <sub>2</sub> Concentrations (µg/m <sup>3</sup> )		Difference between Projected Do Minimum and Do Something (µg/m <sup>3</sup> )
			Do Minimum	Do Something	
R11	Residential property on Breck Road near Skippool roundabout	21.7	16.9	13.3	-3.6
R12	Residential property on Skippool Road near roundabout	28.5	22.2	16.8	-5.4
R13	Residential property on corner of Breck Road and Parrys Way	19.4	14.7	13.5	-1.2
R14	Residential property on corner of Station Road and Lower Green	19.4	13.7	12.8	-0.9
R15	Residential property on junction of Lower Green and Garstang Road East	18.3	14.7	15.0	0.3
R16	Residential property on Garstang Road East	17.9	14.7	17.6	2.9
R17	Residential property on junction of Vicarage Road and Chapel Street	33.2	28.8	27.0	-1.8
R18	Residential property on Fleetwood Road	18.8	15.2	16.1	0.9
R19	Residential property on Fleetwood Road	18.2	14.7	15.5	0.8
R20	Residential property on junction of Hardhorn Road and Garstang Road East	21.6	17.3	18.0	0.7
R21	Residential property on junction of Chapel Street and Higher Green	40.1	30.0	30.0	0.0
R22	Residential property on Skippool Road	20.7	15.3	15.4	0.1
R23	Residential property on Garstang Road	13.6	10.7	13.0	2.3

Receptor		Base Year 2015 Annual Mean NO <sub>2</sub> Concentrations (µg/m <sup>3</sup> )	LTT Adjusted 2022 Annual Mean NO <sub>2</sub> Concentrations (µg/m <sup>3</sup> )		Difference between Projected Do Minimum and Do Something (µg/m <sup>3</sup> )
			Do Minimum	Do Something	
R24	Residential property off Lodge Lane	9.5	7.3	10.2	2.9
R25	Residential property on Fleetwood Old Road	17.9	14.7	15.0	0.3
R26	Residential property on the corner of Riversway and Breck Road	17.3	13.2	12.0	-1.2
R27	Residential property on Newton Grove	28.4	22.4	22.8	0.4
R28	Residential property on Elderwood Avenue	32.6	25.7	26.2	0.5
R29	Residential property on Mains Lane	28.7	23.1	15.9	-7.2
R30	Residential property off Garstang Road	11.7	9.4	9.9	0.5
R31	Residential property on Old Mains Lane	16.5	13	13.5	0.5
R32	Residential property on Mains Lane	17.3	13.8	9.0	-4.8
R33	Residential property on Mains Lane	18.2	14.5	9.1	-5.4
R34	Residential property on Mains Lane	16.6	13.3	8.6	-4.7
R35	Residential property on Mains Lane	24.9	19.9	19.9	0.0
R36	Residential property off Garstang Road	11.6	9.3	9.7	0.4
R37	Residential property on Blackpool Lane	21.0	17.6	18.8	1.2
R38	Residential property on Fleetwood Road	28.4	22.2	22.7	0.5
R39	Residential property at corner of Mythop Road and Preston New Road	20.8	17.0	16.5	-0.5

Receptor		Base Year 2015 Annual Mean NO <sub>2</sub> Concentrations (µg/m <sup>3</sup> )	LTT Adjusted 2022 Annual Mean NO <sub>2</sub> Concentrations (µg/m <sup>3</sup> )		Difference between Projected Do Minimum and Do Something (µg/m <sup>3</sup> )
			Do Minimum	Do Something	
R40	Future residential property at Moorfield Park Development Site	10.1	7.8	9.0	1.2
R41	Future residential property at Moorfield Park Development Site	12.3	9.6	11.5	1.9

LTT=Long Term Trend. Predicted NO<sub>2</sub> concentrations were adjusted using a Gap Factor based on the long-term adjustment factor calculated by the Highways Agency's "Interim Highways Agency Alternative Long-Term Gap Analysis Calculator v1.1". All values reflect predicted concentrations for the Opening Year 2022 and have been verified using local authority monitoring data.

- 5.4.10 Table 5-1 shows that in the Scheme opening year there are no exceedances of the AQS Objectives.
- 5.4.11 The results shown in Table 5-2 indicate that based on the 41 sensitive receptor locations assessed, 17 are predicted to experience a beneficial impact in air quality and 22 are predicted to experience an adverse impact in air quality as a result of the Scheme, while two receptors are predicted to experience no change.
- 5.4.12 The largest improvement in air quality is predicted at R6, located on Mains Lane close to the junction of Garstang Road East and Garstang New Road which is to be altered to a roundabout as part of the Scheme. This is due to a reduction of traffic flows along Mains Lane due to re-routing of approximately 22,500 vehicles per day (including 6% HDVs).
- 5.4.13 The largest adverse impact in air quality is predicted at receptors R3 and R24 (increases of 3.6µg/m<sup>3</sup> and 2.9 µg/m<sup>3</sup>, respectively) due to their close proximity (approximately 50m) to a new bypass being constructed in an area where there was previously no road near Lodge Lane, hence an increase in traffic emissions at these locations. The predicted NO<sub>2</sub> concentrations at these receptors in the opening year with the Scheme are however well below the AQS Objective of 40µg/m<sup>3</sup>.
- 5.4.14 The highest predicted annual mean NO<sub>2</sub> concentration in the opening year with the Scheme is at R21 (30µg/m<sup>3</sup>) which is located within the Chapel Street AQMA. The modelled NO<sub>2</sub> concentrations at this location show an exceedance of the AQS Objective in the base year but fall below the AQS Objective concentration in the opening year, with no change as a result of the Scheme.
- 5.4.15 PM<sub>10</sub> concentrations were also modelled for each scenario. Concentrations at each receptor are predicted to be well below the AQS Objective for the base year and opening year both with and without the Scheme, with the highest predicted Do

Something concentration of  $27.4\mu\text{g}/\text{m}^3$ .

- 5.4.16 The receptor concentrations in the Scheme opening year are all predicted to be below the AQS Objectives. As a result, the Scheme impacts are not considered to be significant in accordance with IAN 174/13 (as only receptors which exceed the AQS Objectives are considered in the judgement as to whether the Scheme impacts are significant). The Scheme is also considered to be low risk in terms of impacting on compliance with the EU Directive in accordance with IAN175/13. The highest  $\text{NO}_2$  concentration in the opening year for any of the Defra PCM links located in the study area is  $24.6\mu\text{g}/\text{m}^3$ , and the highest increase in  $\text{NO}_2$  concentration with the Scheme is predicted to be  $3.6\mu\text{g}/\text{m}^3$ , therefore it is unlikely that the limit value of  $40\mu\text{g}/\text{m}^3$  would be exceeded.
- 5.4.17 The assessment shows there are no exceedances of the AQS Objectives therefore the Scheme does not result in a significant impact on air quality and as such no mitigation measures would be required.



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## 6 CULTURAL HERITAGE

### 6.1 Introduction

- 6.1.1 This Section provides baseline data about known cultural heritage assets, it identifies additional cultural heritage information to be obtained and indicates potential effects (during construction and operation) as well as mitigation measures that may be required to order to avoid, reduce and, if possible, remedy significant adverse effects.
- 6.1.2 This Section should be read together with Figure 6.1 Heritage Asset Location Plan and Study Area at Appendix A and the Gazetteer at Appendix B.

### 6.2 Existing Environmental Conditions

- 6.2.1 Baseline cultural heritage data has been collated for an area extending 1km from either side of the Scheme and is presented on Figure 6.1 at Appendix A. The study area was chosen based on a combination of the requirements of the DMRB and professional judgement.
- 6.2.2 Within the study area the following heritage assets can be found (refer to Figure 6.1 at Appendix A).
- Ten Grade II listed buildings (including the Ice House at Singleton Hall)
  - 158 non-statutory heritage assets (including Singleton Park and the Ribchester to Poulton-le-Fylde Roman Road)
- 6.2.3 Singleton Conservation Area is located 585m south of the Scheme and Poulton-le-Fylde Conservation Area, located 720m west of the Scheme are also within the study area.
- 6.2.4 Within the Scheme footprint the historic landscape does not have any statutory designation but is ancient, post medieval and modern origin.
- 6.2.5 There are no Grade I or II\* listed building within the study area.
- 6.2.6 There are no World Heritage Sites, scheduled monuments, registered parks and gardens or registered battlefields within the study area or immediately adjacent to it.

### 6.3 Other baseline information to be obtained / surveys to be undertaken and limitations

- 6.3.1 A cultural heritage field walkover survey is proposed to assess the current land conditions within the Scheme. The walkover would also assess any potential impact to heritage constraints, due to modern disturbance, and would aim to identify the presence of any visible unrecorded heritage features.
- 6.3.2 A basic analysis of easily accessible aerial photographs would be undertaken to identify further landscape and earthwork features. Zones of theoretical visibility (i.e. areas from which you can theoretically see the Scheme) would also be applied to the heritage constraints and the suitability of the study area would be considered.

- 6.3.3 Data collected during the walkover survey together with existing baseline data would be presented in further detail within a cultural heritage desk-based assessment (DBA) of the Scheme.
- 6.3.4 Consultation with stakeholders would also be undertaken to inform the Cultural Heritage ES chapter. Consultation is proposed to be undertaken with:
- Historic England
  - Lancashire County Council
  - Fylde Borough Council
  - Wyre Borough Council
- 6.3.5 Following consultation with stakeholders and completion of the DBA, further surveys may be requested including intrusive and non-intrusive investigations.

## 6.4 Potential Effects and Mitigation Measures

### Aspects Scoped into and out of the Assessment

- 6.4.1 The following has been scoped in to the EIA on the basis that potentially significant effects cannot be ruled out at this stage. These are subject to confirmation following the completion of the DBA:
- 6.4.2 Effects during construction and operation on:
- The Grade II listed Ice House
  - Other listed buildings to the south of the Scheme at the edge of the above Conservation Areas
  - Singleton and Poulton-le-Fylde Conservation Areas
  - The non-statutory Singleton Park and the Ribchester to Poulton-le-Fylde Roman Road (and associated archaeological remains)
  - Other non-statutory archaeology and built heritage within the study area
  - The historic landscape
- 6.4.3 The potential effects of the Scheme during construction and operation along with the measures proposed to manage them are outlined in Tables 6-1 to 6-6.

### Construction

- 6.4.4 During construction, effects on designated assets would be temporary and negative unless stated otherwise. Effects on non-designated assets would be permanent and negative unless otherwise stated.
- 6.4.5 Note: Numbers in brackets are unique identifiers, assigned to each asset and are presented on Figure 6.1 at Appendix A.

**Table 6-1: Effects and mitigation on Grade II Listed Buildings – Construction**

Receptor – Grade II listed buildings
<p><i>Nature of Effect:</i></p> <p>The Ice House (<b>LB8</b>) is located approximately 40m south of the draft order limits<sup>4</sup>. Its setting is primarily informed by its association to Singleton Hall and is well shielded by woodland. The asset has the potential to experience the effects of construction activity including noise, dust and visual intrusion during the construction phase of the Scheme which may affect the setting of the asset.</p> <p>Other assets that have the potential to experience an effect during construction include:</p> <p>The Grade II listed Liscoe (<b>LB6</b>), located 865m to the north of the draft order limits. Mains Hall (<b>LB1</b>) and the nearby dovecote (<b>LB9</b>) located c. 415m from the draft order limits. The former engine house (<b>LB2</b>), Church of St Anne (<b>LB3</b>), the Lychgate to the Church of St Anne (<b>LB7</b>) and the settlement of Singleton are located c.970m to the south of the draft order limits. End Cottage (<b>LB4</b>), The Manor (<b>LB5</b>), the former chapel of St John and attached Priest’s House (<b>LB10</b>) may experience effects during the construction phase. These assets settings are primarily informed by their rural location or by their proximity to settlements. The assets have the potential to experience visual and noise effects relating to construction traffic. It is not considered that construction dust would be an issue at this distance (beyond 200m).</p>
<p><i>Duration:</i></p> <p>During the two-year construction period.</p>
<p><i>Mitigation:</i></p> <p>Additional mitigation to paragraph 4.3.3 includes the implementation of Scheme specific commitments in a Construction Environmental Management Plan (CEMP<sup>5</sup>). Commitments could include requiring damping down construction vehicles and the construction site to reduce dust, ensuring construction traffic follows designated construction routes, stipulating closed-board fencing is installed to remove visual intrusion etc. near to the Ice House.</p>

<sup>4</sup> The Scheme’s Red Line Boundary

<sup>5</sup> The purpose of a CEMP is to outline how a construction project will avoid, minimise or mitigate effects on the environment and surrounding area. CEMPs also detail the implementation of environmental commitments in accordance with those outlined in an ES. For a DCO Scheme how commitments are secured are also outlined in a Mitigation Commitment Register.

**Table 6-2: Effects and mitigation on Conservation Areas- Construction**

Receptor – Conservation Areas
<p><i>Nature of Effect:</i></p> <p>Two Conservation Areas including Poulton-le-Fylde (<b>CA1</b>) and Singleton (<b>CA2</b>) fall within the heritage study area. Singleton Conservation Area has some small potential to have its setting impacted during the construction period of the Scheme due to the presence of construction traffic (although this is still to be confirmed), construction noise and some limited, distant visual intrusion from the construction works. However, this is anticipated to be very minor in nature and temporary. It is considered that the Poulton-le-Fylde Conservation Area is at a sufficient distance from the Scheme and is sufficiently screened by existing buildings that it would not be significantly affected. However, there is potential that construction traffic may affect this area although this is yet to be confirmed.</p>
<p><i>Duration:</i></p> <p>During the two-year construction period.</p>
<p><i>Mitigation:</i></p> <p>Additional mitigation to paragraph 4.3.3 includes the implementation of a CEMP which would detail specific environmental commitments to offset adverse effects. Commitments could include ensuring construction traffic follows designated construction routes and avoids Conservation Areas.</p>

**Table 6-3: Effects and mitigation on Non-Statutory Heritage Assets- Construction**

Receptor – Non-Statutory Heritage Assets
<p><i>Nature of Effect:</i></p> <p>Key non-statutory heritage assets that could potentially be directly and permanently impacted by the Scheme are the remains of the Ribchester to Poulton-le-Fylde Roman Road (<b>139</b>) and the area of Singleton Park (<b>151</b>) as construction would remove part of each of these heritage assets. However, the exact location of the Roman Road in relation to the Scheme is unknown so there is some uncertainty surrounding this issue until further investigation has taken place.</p> <p>The Scheme would also have a direct impact on potential below ground archaeological remains associated with the six find spots (<b>107, 108, 109, 110, 113, 159</b>) recorded within the Scheme footprint. The extent of the negative effects is however currently unknown as the actual nature of any potential remains associated with these find spots cannot be established without further investigation.</p> <p>In addition to the above, the Scheme may have a direct physical impact on the remains of a further 19 non-designated heritage assets (<b>59, 62, 65, 66, 68, 69, 70, 71, 103, 116, 118, 140, 142, 144, 145, 146, 147, 149, 152</b>). These assets are located within the perimeter of the draft order limits of the Scheme. Direct negative impacts effects on these heritage assets includes the partial or permanent removal. Impacts of this nature would be long term.</p>

Receptor – Non-Statutory Heritage Assets
<p>The setting of 17 non-designated heritage (<b>6, 10, 13, 16, 22, 33, 34, 38, 40, 43, 73, 104, 105, 106, 132, 134, 135</b>) assets may also be impacted by the construction of the Scheme, due to construction activity in the area. These assets are all built heritage assets and mainly located within the Poulton-le-Fylde settlement area. The impacts to setting from construction activity would be temporary and reversible.</p> <p>The Scheme would potentially have a permanent effect on the historic landscape. The effects of the Scheme may result in the partial loss of areas characterised as ancient, post-medieval and modern enclosure.</p> <p>The Scheme may also have an impact on unknown archaeological remains within the draft order limits. Assessment of the likelihood for the presence of unknown archaeological remains would be considered in the DBA.</p>
<p><i>Duration:</i></p> <p>The impacts would be permanent except where stated.</p>
<p><i>Mitigation:</i></p> <p>Additional mitigation to paragraph 4.3.3 includes the implementation of a CEMP which would detail specific environmental commitments to offset adverse effects.</p> <p>Commitments could include requiring damping down to reduce dust produced by construction activities, management of construction traffic to avoid sensitive areas and undertaking archaeological investigations and recording in advance of, or during, construction.</p>

**Operation**

6.4.6 The potential effects of the Scheme during operation and the measures proposed to manage them are outlined in Tables 6-4 to 6-6.

**Table 6-4: Effects and Mitigation on Grade II Listed Buildings - Operation**

Receptor - Grade II listed buildings
<p><i>Nature of Effect:</i></p> <p>There would be no direct impacts to Grade II listed buildings during operation. Only those listed buildings which have potential to have their settings affected by the Scheme are discussed here. Other listed buildings within the study area are sufficiently distant with screening to prevent visual or settings impacts.</p> <p>The Grade II Listed Ice House at Singleton Hall (<b>LB8</b>) is located approximately 40m to the south of the draft order limits. The setting of this asset is considered to be primarily informed by its rural location adjacent to Singleton Hall. This setting makes a positive contribution to the asset's significance. The Scheme would introduce increased levels of traffic and noise to this area which could affect how the asset is experienced. The noise assessment shows that the assets may experience a perceptible adverse change due to operational traffic.</p>

Receptor - Grade II listed buildings
<p>The Grade II Listed End Cottage Old Farm (<b>LB4</b>), The Manor (<b>LB5</b>), the former chapel of St John and the attached priest's house (<b>LB10</b>) are all located a minimum of 500m from the draft order limits. Their settings are primarily informed by the settlement of Poulton-le-Fylde which makes a positive contribution to their significance. The Scheme has potential to introduce increased levels of traffic and noise to this area which could affect how the asset is experienced. The noise assessment predicts that LB2, LB3 and LB7 may experience a perceptible adverse change during the opening year of operation. The remaining listed buildings are predicted to experience an imperceptible change from operational traffic. The noise assessment further predicts that listed buildings <b>LB2</b>, <b>LB3</b> and <b>LB7</b> have the potential to record an imperceptible change over longer term operation.</p>
<p><i>Duration:</i>                      The lifetime of the Scheme.</p>
<p><i>Mitigation:</i>                      Additional mitigation to that outlined in paragraph 4.3.3 includes the retention of the existing woodland between the Scheme and the Ice House as this would provide visual screening minimising the negative effects on the setting of this Listed Building (LB8). Landscape screening in the form of proposed planting and earth mounds would help screen the Scheme from the other listed buildings to the south. Section 9: Noise and Vibration outlines proposed noise mitigation which would benefit the settings of the assets outlined above.</p>

**Table 6-5: Effects and Mitigation on Conservation Areas - Operation**

Receptor – Conservation Areas
<p><i>Nature of Effect:</i>                      An increase in noise due to an increase in traffic closer to the Singleton Conservation Area (<b>CA2</b>) has the potential to impact the setting of this asset although it is considered to be a very minor impact. It is also unlikely that there would be significant views to the Scheme at this distance and taking into account existing and proposed vegetation. The Poulton-le-Fylde Conservation Area (<b>CA1</b>) would have no change to its setting during the operation of the Scheme and it is predicted to experience an imperceptible change by operational road traffic by the noise assessment.</p>
<p><i>Duration:</i>                      Lifetime of the Scheme.</p>
<p><i>Mitigation:</i>                      No mitigation is proposed.</p>



**Table 6-6: Effects and Mitigation on Non-Statutory Heritage Assets - Operation**

Receptor - Non-Statutory Heritage Assets
<p><i>Nature of Effect:</i></p> <p>Negative effects as outlined in Table 6-3 would continue once the Scheme is open. Noise from the operational Scheme may impact the setting of Singleton Park (<b>151</b>), Singleton Hall (<b>38</b>) and gardens (<b>149</b>) as it may affect levels of tranquillity in this area</p>
<p><i>Duration:</i></p> <p>Lifetime of the Scheme.</p>
<p><i>Mitigation:</i></p> <p>In addition to the mitigation outlined in Table 6-2, any additional planting for visual screening within Singleton Park would add to the current areas of tree, hedgerow and shrubs. Their maturity over time would minimise negative effects further. Planting schemes would also consider how best to retain the historic landscape elements such as the parkland character where appropriate.</p> <p>Refer to Section 9: Noise and Vibration which outlines proposed noise mitigation.</p>

## 7 BIODIVERSITY

### 7.1 Introduction

- 7.1.1 This Section provides the biodiversity baseline data, identifies additional data to be obtained and indicates potential effects (during construction and operation) as well as mitigation measures that may be required in order to avoid, reduce and, if possible, remedy significant adverse effects.
- 7.1.2 This Section should be read together with Figures 7.1 Designated and Proposed Statutory Sites, 7.2 Non-Statutory Designated Sites, 7.3 Phase 1 Habitat Survey and Figure 16.1 Draft Environmental Mitigation at Appendix A.

### 7.2 Existing Environmental Conditions

- 7.2.1 Distances ('Study Area) from the Scheme within which desk-based studies or surveys were undertaken included:
- 500m for habitat and protected-species surveys (including for breeding, passage and wintering bird surveys)
  - 1km for non-statutory designated sites (e.g. Biological Heritage Sites (BHSs)) and records relating to protected or notable species and habitats
  - 2km for statutory designated sites listed within the Natura 2000 network including:
    - Special Areas of Conservation (SACs)
    - Sites of Community Importance (SCI) and candidate SACs
    - Special Protection Areas (SPA) and potential SPAs
    - Marine Protected Areas (MPAs), including Marine Conservation Zones (MCZs) and recommended MCZs (rMCZ)
    - Ramsar sites
  - 30km for SACs where bats are noted as a qualifying interest.
- 7.2.2 Only receptors which would be subject to detailed assessment in the ES are discussed within this Section.

#### Designated Sites

- 7.2.3 Seven designated sites were identified within the Study Area (refer to Figures 7.1 and 7.2 at Appendix A):
- Morecambe Bay and Duddon Estuary SPA (adjacent, north)
  - Morecambe Bay Ramsar site (adjacent, north)
  - Wyre Estuary SSSI (adjacent, north)
  - Wyre-Lune rMCZ (adjacent, north)
  - Skippool Marsh and Thornton Bank BHS (adjacent, north)

- Shard Bridge Field Ditch BHS (300m, east)
- River Wyre – Upper Tidal Section BHS (600m, north)

### Morecambe Bay and Duddon Estuary SPA

7.2.4 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 37,404.6ha. The SPA is designated for supporting populations of European importance of breeding, over-wintering and passage birds of the following species (Table 7-1) listed on Annex 1 ('Annex 1 Species') of the Birds Directive.

**Table 7-1: Biodiversity - Qualifying features of the Morecambe Bay and Duddon Estuary SPA**

Species / Features	Count (No. individuals)
<b>Breeding season</b>	
Little tern <i>Sterna albifrons</i>	84
Sandwich tern <i>Sterna sanvicensis</i>	1,608
Common tern <i>Sterna hirundo</i>	570
Lesser black-backed gull <i>Larus fuscus graellsii</i>	9,720
Herring gull <i>Larus argentatus argentatus</i>	20,000
Internationally important seabird population of over 20,000 individuals	40,672
<b>Non-breeding season</b>	
Whooper swan <i>Cygnus cygnus</i>	113
Pink-footed goose <i>Anser brachyrhynchus</i>	15,648
Shelduck <i>Tadorna tadorna</i>	5,878
Pintail <i>Anas acuta</i>	2,498
Little egret <i>Egretta garzetta</i>	134
Oystercatcher <i>Haematopus ostralegus</i>	55,888
Golden plover <i>Pluvialis apricaria</i>	1,900
Grey plover <i>Pluvialis squatarola</i>	2,000
Ringed plover <i>Charadrius hiaticula</i>	1,049
Eurasian Curlew <i>Numenius arquata</i>	12,209
Black-tailed godwit <i>Limosa</i>	2,413
Bar-tailed godwit <i>Limosa lapponica</i>	3,046
Turnstone <i>Arenaria interpres</i>	1,359
Knot <i>Calidris canutus</i>	32,739

Species / Features	Count (No. individuals)
Ruff <i>Calidris pugnax</i>	8
Sanderling <i>Calidris alba</i>	3,600
Dunlin <i>Calidris alpina</i>	26,982
Redshank <i>Tringa totanus</i>	11,133
Mediterranean gull <i>Larus melancephalus</i>	18
Lesser black-backed gull <i>Larus fuscus</i>	9,450
Internationally important waterbird assemblage of over 20,000 individuals	266,751

### Morecambe Bay Ramsar site

7.2.5 Morecambe Bay Ramsar site is designated for: migratory waterfowl with Ringed Plover in internationally important numbers; assemblages of over-wintering birds which are of international importance; and, populations of breeding, over-wintering and passage birds also of international importance. The site supports the third largest population of wintering waterfowl in the UK.

7.2.6 Specifically, Morecambe Bay is designated as a Ramsar site by qualifying with the following Ramsar Criteria:

- Criterion 4: By supporting plant and/or animal species at a critical stage in their life cycles, or providing refuge during adverse conditions. The site is staging area for migrating waterfowl including internationally important numbers of ringed plover
- Criterion 5: By regularly supporting 20,000 or more waterbirds. Supports assemblages of international importance: 223,709 waterfowl in winter
- Criterion 6: Regularly supports 1% of the individuals in a population of one species or sub-species of waterbird (refer to Table 7-2)

**Table 7-2: Biodiversity - Qualifying features of the Morecambe Bay Ramsar Site**

Season	Species / Features
Breeding	Sandwich tern
	Lesser black-backed gull
	Herring gull
On passage (peak counts spring/autumn)	Greater Cormorant <i>Phalacrocorax carbo</i>
	Eider <i>Somateria mollissima</i>
	Eurasian Curlew
	Shelduck
	Pintail

Season	Species / Features
	Oystercatcher
	Grey plover
	Ringed plover
	Turnstone
	Sanderling
	Redshank
	Lesser black-backed gull
Over winter (peak counts)	Pink-footed goose
	Great crested grebe <i>Podiceps cristatus</i>
	Goldeneye <i>Bucephala clangula</i>
	Wigeon <i>Anas penelope</i>
	Golden plover
	Red-breasted merganser <i>Mergus serrator</i>
	Lapwing <i>Vanellus</i>
	Bar-tailed godwit <i>Limosa lapponica</i>
	Knot
	Dunlin

### Wyre Estuary SSSI

7.2.7 The Wyre Estuary SSSI is designated for its ornithological interest, including wintering and passage black-tailed godwit, wintering turnstone and wintering teal *Anas crecca*; and, intertidal habitats including saltmarsh.

### Wyre-Lune rMCZ

7.2.8 The Wyre-Lune rMCZ supports important populations of smelt *Osmerus eperlanus* and eel *Anguilla anguilla*, but is not yet designated. The rMCZ would still however be considered as an area which meets selection criteria, but which is not designated.

### Skippool Marsh and Thornton Bank BHS

7.2.9 The principal habitats of the BHS comprise un-grazed saltmarsh and relict woodland. Of particular note are 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 9.05ha and partially overlaps with the Wyre-Lune rMCZ at Skippool Creek.

### Shard Bridge Field Ditch BHS

7.2.10 The BHS comprises a longitudinal hollow and ditch supporting saltmarsh vegetation which drains into the immediately adjacent River Wyre and Morecambe Bay SPA. It

measures approximately 0.35ha, 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.

### **River Wyre – Upper Tidal Section BHS**

- 7.2.11 The site comprises a tidal, 3km 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. Two species on the Provisional Lancashire Red Data List of Vascular Plants occur in the BHS – Sand Leek *Allium scorodoprasum* and Common Meadow-Rue *Thalictrum flavum*. The site measures approximately 8ha, partially overlaps with the Wyre-Lune rMCZ and is immediately adjacent to the Morecambe Bay and Duddon Estuary SPA.

### **Protected and notable habitats**

- 7.2.12 A Phase 1 Habitat survey was undertaken to produce baseline information on habitats within the survey area (refer to Figure 7.3 at Appendix A). 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 method described in the 'Handbook for Phase 1 Habitat Survey – a technique for environmental audit' Joint Nature Conservation Committee (2010), JNCC, Peterborough.

- 7.2.13 Section 41 of The Natural Environment and Rural Communities (NERC) Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England.

- 7.2.14 Eight habitats of principal importance (hereafter referred to as 'Section 41 Habitats'), on which a detailed assessment of potential impacts would be undertaken, were identified within 500m of the Scheme, during the Phase 1 Habitat survey:

- Deciduous woodland
- Hedgerow
- Coastal saltmarsh and mudflats
- Coastal and floodplain grazing marsh
- Ponds
- Rivers – Skippool Creek
- Rivers – Main Dyke
- Other rivers

### **Deciduous Woodland**

- 7.2.15 Areas of deciduous woodland were widespread within the survey area but restricted to relatively small blocks associated with agricultural fields.

### **Hedgerows**

- 7.2.16 A network of hedgerows was interspersed throughout the survey area. Although these hedgerows were predominantly species-poor and dominated by Hawthorn



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*Crataegus monogyna*, they met the criteria for Section 41 Hedgerow.

### **Coastal Saltmarsh and Mudflats**

- 7.2.17 Areas of coastal saltmarsh and mudflats habitat associated with the River Wyre were identified to the north of the Scheme.

### **Coastal and Floodplain Grazing Marsh**

- 7.2.18 An extensive area of coastal and floodplain grazing marsh habitat was identified. coastal and floodplain grazing Marsh habitat is particularly important for several breeding waders, such as lapwing and curlew, both of which are qualifying species of the Morecambe Bay and Duddon Estuary SPA.

### **Ponds**

- 7.2.19 Approximately 128 ponds, distributed widely throughout the survey area, were identified during habitat and amphibian surveys.

### **Rivers – Skippool Creek**

- 7.2.20 Skippool Creek was semi-culverted and flows north into the River Wyre. The creek was surrounded by poor semi-improved grassland comprising species such as bramble *Rubus fruticosus* agg., common nettle *Urtica dioica*, creeping thistle *Cirsium arvense*, creeping bent *Agrostis stolonifera*, cock's-foot *Dactylis glomerata* and hogweed *Heracleum sphondylium*.

### **Rivers – Main Dyke**

- 7.2.21 Main Dyke was a heavily-modified tributary of the River Wyre and was of moderate quality. It measures approximately 3m wide and was culverted beneath the existing A585 and A586 roads. Main Dyke contains very little emergent vegetation and was predominantly tree-lined. The banks (where accessible to livestock) were heavily grazed and poached.

### **Other Rivers**

- 7.2.22 The other rivers Section 41 Habitat description includes a very wide range of types, encompassing all natural and near-natural running waters in the UK (i.e. with features and processes that resemble those in 'natural' systems). A network of small watercourses was interspersed throughout the study area; due to their small-scale, both individually and collectively, these watercourses have been included, collectively, under the Other rivers habitat description

### **Protected species**

- 7.2.23 A suite of targeted surveys was undertaken to generate baseline data for ecological and ornithological receptors.

### **Great crested newts**

- 7.2.24 Surveys to determine the presence or absence, and, where appropriate, population size, of great crested newts *Triturus cristatus* were undertaken on 66 ponds within the survey area. The surveys confirmed the presence of small or medium populations of great crested newts in 10 ponds.

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## Autumn Passage and wintering birds

- 7.2.25 Surveys comprised weekly diurnal visits between mid-September to November for autumn passage birds in 2016 and 2017; and, two diurnal surveys and one dawn or dusk survey per month between October and March 2016–17 and October to March 2017–18. The surveys comprised a series of transect routes covering the Scheme and up to 500m from the Scheme boundary within habitats that could be suitable for use by birds. In particular, identifying areas that could potentially constitute functionally-linked land (i.e. land outside of a designated site that provides an essential ecological function to qualifying species, for example foraging areas for wintering wildfowl) was considered during the surveys.

### Autumn Passage

#### Annex 1 SPA / Ramsar Species

- 7.2.26 No Annex 1 SPA species were recorded during the 2016 or 2017 autumn passage surveys.

#### Other SPA species

- 7.2.27 Six Ramsar qualifying species were observed within the Scheme area during the 2016 autumn passage transect surveys: common redshank, common shelduck, Eurasian curlew, greater cormorant, lesser black-backed gull and Eurasian oystercatcher.

#### Schedule 1 species observations

- 7.2.28 Wild birds, including their nests and their eggs, listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) are afforded special protection during the breeding season.
- 7.2.29 Five Schedule 1 species were recorded during the autumn passage transect survey visits: black-headed gull *Chroicocephalus ridibundus*, hen harrier *Circus cyaneus*, kingfisher *Alcedo atthis*, Mediterranean gull *Ichthyaetus melanocephalus* and redwing *Turdus iliacus*.

#### Other species

- 7.2.30 Several notable species of farmland passerine and waders were recorded in the study area, or near the Scheme. These species are all listed as Birds of Conservation Concern.

### Wintering birds

#### Annex 1 SPA Species

- 7.2.31 Thirteen Annex 1 SPA species were recorded during the wintering bird surveys: black-tailed godwit, common redshank, common shelduck, dunlin, Eurasian curlew, Eurasian oystercatcher, lesser black-backed gull, little egret, Mediterranean gull, pink-footed goose and red knot.

#### Ramsar site species

- 7.2.32 There were three Ramsar qualifying species observed during the 2016 and 2017 winter bird transect surveys: lapwing, red-breasted merganser and wigeon.

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### Other species

- 7.2.33 Several notable species of farmland passerines (songbirds) and waders were also recorded in the study area, or near the Scheme. These species are all listed as Birds of Conservation Concern.

### Passage and Wintering Bird Survey Summary

- 7.2.34 Except for terns and sea ducks, the majority of species listed as qualifying features of the Morecambe Bay and Duddon Estuary SPA and the Morecambe Bay Ramsar site were recorded during the surveys. However, in all but three cases, records were either from within the Wyre Estuary or as single individuals or small groups of individuals in fields, with no marked patterns of usage of favoured fields within the study area.
- 7.2.35 The three species that were recorded in numbers within the overall study area that occasionally exceeded 1% of the qualifying population threshold were pink-footed goose, curlew and lapwing.
- 7.2.36 Pink-footed geese were recorded during every survey visit. However, the great majority of records were of birds passing over the site *en route* to or from feeding areas elsewhere. On the ground, flocks were encountered relatively infrequently, and with no clearly discernible pattern to their distribution across the survey area.
- 7.2.37 Curlew were also recorded during every survey visit. The majority were recorded within the Wyre Estuary to the north, at the outer edge of the study area. Within terrestrial habitats, the peak count of a single grouping was recorded between Mains Hall Manor and the Estuary, however, the most regular and frequent use of fields was within the western part of the study area, between Mains Road and Garstang Road East. Sightings were most commonly of single individuals in fields.
- 7.2.38 The recorded distribution of lapwings was similar to that of curlew, with a tendency for larger flocks to be distributed within, or close to the estuary at the outer edge of the study area. A large flock was recorded within inland fields on only one occasion, when a flock was recorded in a field to the immediate south of Garstang Road East and adjacent to the Poulton Industrial Estate, three further sightings of smaller flocks were recorded within the same field.

### Breeding birds

- 7.2.39 Surveys for breeding birds comprised weekly diurnal visits between March to mid-May 2017 for spring passage birds and one dawn or dusk visit per month between April and June 2017 for the breeding season.
- 7.2.40 Two Annex 1 SPA species were observed during the 2017 transect surveys:
- Herring gull
  - Lesser black-backed gull
- 7.2.41 Herring gull were generally observed utilising the River Wyre particularly at low tide and were recorded foraging or roosting during each survey visit throughout the breeding season. A small number of herring gull were also observed foraging within low-lying waterlogged ground south west of the Scheme during a survey which

followed sustained heavy rainfall. No herring gulls were thought to be nesting on site during the breeding season.

- 7.2.42 Lesser black-backed gulls were seen to the north west of Skippool Creek during low and mid-tide surveys. These birds were seen either bathing, foraging or loafing on the river. Lesser black-backed gulls were observed on the site during each month of the breeding season with a peak count of 22 birds in June 2017. No lesser black-backed gull were thought to be nesting on site during the breeding season.

#### **Ramsar site species**

- 7.2.43 Ringed plover, a Ramsar Criterion 4 qualifying feature of Morecombe Bay Ramsar site, were observed in May and June 2017. In May, two birds were recorded foraging on mudflats on the northern bank of the River Wyre, east of Shard bridge. A single individual was recorded in the same area in June. It is considered likely that one pair of ringed plover were breeding on the north side of the river in 2017.

#### **Schedule 1 species**

- 7.2.44 One Schedule 1 species, green sandpiper *Tringa ochropus*, was also observed when a single bird was recorded in June foraging on mudflats within the estuary. No evidence of breeding was recorded, and it is considered likely that the bird was an early arrival on passage.

#### **Other species**

- 7.2.45 Several notable species of farmland passerine and waders were recorded in the survey area, or near the Scheme.

#### **Bats**

- 7.2.46 Surveys comprising Roost Surveys (roost assessments and emergence and return surveys) and Activity Surveys (static monitoring and transect surveys) were undertaken to generate baseline data on bats.

- 7.2.47 Roost surveys identified a small number of bat roosts within buildings in the survey area, whilst the Activity Surveys identified a species assemblage typical of the region, comprising: noctule bat *Nyctalus noctule*, Nathusius' pipistrelle *Pipistrellus nathusii*, common pipistrelle *P. pipistrellus*, soprano pipistrelle *P. pygmaeus*, *Myotis* spp. and brown long-eared bat *Plecotus auritus*.

#### **Otter**

- 7.2.48 Otter *Lutra* activity, although limited in extent, was recorded close to Mains Lane Bridge and Main Dyke.

### **7.3 Other baseline information to be obtained / surveys to be undertaken and limitations**

- 7.3.1 Autumn/spring passage and winter bird surveys are on-going and would be completed in spring 2018.

**7.4 Potential Effects and Mitigation Measures**

**Aspects Scoped out of the Assessment**

7.4.1 Features presented in Table 7-3 have been scoped out the EIA, with agreement from Natural England, on the basis that, at this stage, it has been concluded that, following standard mitigation measures, significant effects were not likely.

**Table 7-3: Biodiversity - Ecological receptors to be scoped out of detailed assessment**

Feature	Reason
River Wyre – S41 Habitat	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 that would be detailed within a dedicated chapter.
Other (non-S41) Habitats	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.
Protected and Notable Plants (including Fungi)	Records of Biodiversity Action Plan (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).
Invasive Flora	A restricted diversity and distribution of invasive flora were identified during habitat and protected species surveys. Responsibilities relating to invasive flora would be managed through standard mitigation procedures during construction and operation of the Scheme.
Aquatic Invertebrates	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	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.
Fish	No records of fish were identified during the desk study. Waterbodies within the survey area are likely to support common and widespread species only.
Reptiles	No reptiles were recorded during the targeted surveys and it is considered likely that they are absent from the survey area.
Other Amphibian Species (i.e. not Great Crested Newts)	Although present within the survey area, the assemblage of other amphibian species recorded are of Low value. A small number of waterbodies, representing a nominal proportion of the waterbodies in the wider landscape,

Feature	Reason
	would be lost because of the Scheme. Mitigation and compensation measures proposed for great crested newts would sufficiently mitigate any potential impacts to other amphibian species.
Water Vole	No evidence of water vole was recorded during the targeted and it is considered likely that they are absent from the survey area.
Badger	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.
Hedgehog	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 would therefore result in the loss of a nominal proportion of the available habitat.
Brown Hare	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.

## Construction

7.4.2 Negative effects during construction are likely to comprise:

- Disturbance, behavioural changes of animals during construction (qualifying features on functionally linked land)
- Physical loss of habitat/s (functionally linked land)
- Physical damage of habitat/s (functionally linked land)
- Increased severance or fragmentation of habitats (functionally linked land)
- Toxic contamination (pollution via construction and/or road drainage, run-off and spray from road traffic and air pollution due to operation)
- Non-toxic contamination (increased sedimentation, visual and light pollution caused by road lighting)

7.4.3 Effects for each receptor are outlined in Tables 7-4 – 7-10.



**Table 7-4: Biodiversity - Effects and mitigation on Statutory and Non-Statutory Designated Sites – Construction**

Receptor – Statutory and non-statutory designated sites
<p><i>Nature of Effect:</i></p> <p>Negative effects may include: loss of functionally-linked land associated with designated sites supporting bird interest features; 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; disturbance, air quality, vibration and noise.</p>
<p><i>Duration:</i></p> <p>During the two-year construction period.</p>
<p><i>Mitigation:</i></p> <p>Additional mitigation measures to those provided in paragraph 4.3.3 include the implementation of Scheme specific commitments in a CEMP to prevent negative effects during construction. Commitments detailed in the CEMP may include: minimising vegetation removal as far as possible; fencing off sensitive areas to prevent accidental incursions by construction plant and equipment; implementing pollution prevention measures; and, sensitive timing of works to avoid disturbance to qualifying features (i.e. bird species) of a designated site. Where appropriate, construction works would also be supervised by an Ecological Clerk of Works.</p> <p>The provision of mitigation areas, proposals for which have been compiled during the Scheme’s iterative design process (in consultation with Natural England) would reduce negative effects on functionally-linked land and qualifying species during construction through the provision of alternative habitat. Provision for this mitigation land has been included within the draft order limits: one area located at the northern end of the Scheme in the field to the west of Shard Bridge; a second area to the south of Garstang Road, to the east of Poulton Industrial Estate; and a third area and at the southern end, to the east of Fleetwood Road.</p>

**Table 7-5: Biodiversity - Effects and mitigation on protected or notable habitats – Construction**

Receptor – Protected or Notable habitats
<p><i>Nature of Effect:</i></p> <p>Negative effects may include: loss of habitats through land-take (e.g. woodland and ponds); severance, by dividing habitats (e.g. fragmentation of the network of hedgerows); or, disruption of local watercourses (e.g. Main Dyke) and drainage patterns.</p>
<p><i>Duration:</i></p> <p>During the two-year construction period.</p>
<p><i>Mitigation:</i></p> <p>Additional mitigation measures to those provided in paragraph 4.3.3 include the implementation of Scheme specific commitments in a CEMP to</p>

Receptor – Protected or Notable habitats
<p>prevent negative effects during construction. Commitments detailed in the CEMP may include: minimising vegetation removal as far as possible; fencing off sensitive areas to prevent accidental incursions by construction plant and equipment and implementing pollution prevention measures. Where appropriate, construction works would also be supervised by an Ecological Clerk of Works.</p> <p>The provision of mitigation areas, proposals for which have been compiled during the Scheme’s iterative design process (in consultation with Natural England) would reduce negative effects on functionally-linked land and qualifying species during construction through the provision of alternative habitat. Provision for this mitigation land has been included within the draft order limits as detailed in Table 7-4.</p> <p>Protected or notable habitats lost during construction would be compensated for on a minimum 2:1 ratio to ensure no net loss of protected or notable habitat.</p>

**Table 7-6: Biodiversity - Effects and mitigation on great crested newt – Construction**

Receptor – Great Crested Newt
<p><i>Nature of Effect:</i></p> <p>No ponds known to support great crested newts would be lost as a result of the Scheme. Negative effects could however still occur during construction and may include: loss habitat (terrestrial and aquatic) through land-take; severance, by dividing habitats or wildlife corridors; or hydrological effects.</p>
<p><i>Duration:</i></p> <p>During the two-year construction period.</p>
<p><i>Mitigation:</i></p> <p>A European Protected Species Licence (EPSL) is required for the Scheme. The EPSL would include detailed information on measures to be taken to mitigate impacts to great crested newts, which could include the provision of fencing to prevent great crested newts from accessing the construction area, translocation of animals from within the footprint of the Scheme, provision of new breeding ponds and provision of terrestrial habitats such as hibernacula.</p> <p>All construction works would be undertaken in accordance with the EPSL.</p>

**Table 7-7: Biodiversity - Effects and mitigation on wintering/passage birds – Construction**

Receptor – Wintering/passage birds
<p><i>Nature of Effect:</i></p> <p>Negative effects may include: disturbance; physical loss of habitats (including functionally-linked land); physical damage of habitat; increased severance or fragmentation of habitats; toxic contamination; non-toxic contamination; disturbance of foraging or breeding sites.</p>

Receptor – Wintering/passage birds
<p><i>Duration:</i>                      During the two-year construction period.</p>
<p><i>Mitigation:</i>                      Additional mitigation would include appropriate timing of certain activities to avoid sensitive periods (for example, avoiding particularly noisy activities at high tide when birds are more likely to be utilising inland habitats and avoiding night-time working) and the implementation of best practice guidance to reduce risk. Mitigation options include provision of alternative habitat (as noted in Table 7-4) and minimisation of disturbance during construction.                      A CEMP and Construction Method Statement containing control measures / commitments and the standards to be implemented throughout construction of the Scheme would be developed in consultation with appropriate agencies prior to construction.                      Toolbox talks would be given to contractors and other relevant personnel. An Ecological Clerk of Works would oversee the installation of any mitigation measures agreed.</p>

**Table 7-8: Biodiversity - Effects and mitigation on breeding birds – Construction**

Receptor – Breeding birds
<p><i>Nature of Effect:</i>                      Negative effects may include: disturbance; physical loss of habitats; physical damage of habitat; increased severance or fragmentation of habitats; toxic contamination; non-toxic contamination; and, disturbance of foraging or breeding sites.</p>
<p><i>Duration:</i>                      During the two-year construction period.</p>
<p><i>Mitigation:</i>                      Additional mitigation would include appropriate timing of certain activities to avoid sensitive periods (for example undertaking vegetation removal outside of the breeding season (March to August, inclusive) and avoiding night-time working) and the implementation of good practice guidance to reduce risk. Mitigation options include provision of alternative habitat (as noted in Tables 7-4) and minimisation of disturbance during construction.                      Scheme specific commitments within a CEMP and a Construction Method Statement would be implemented and developed in consultation with appropriate agencies prior to construction.                      Toolbox talks would be given to contractors and other relevant personnel. An Ecological Clerk of Works would oversee the installation of any mitigation measures.</p>

**Table 7-9: Biodiversity - Effects and mitigation on bats – Construction**

Receptor – Bats
<p><i>Nature of Effect:</i></p> <p>Negative effects may include disturbance to roosting and foraging bats, habitat fragmentation, loss of foraging habitat or loss of roosts.</p>
<p><i>Duration:</i></p> <p>During the two-year construction period.</p>
<p><i>Mitigation:</i></p> <p>Additional mitigation would include the preparation of a CEMP outlining Scheme specific commitments to offset adverse effects and a Construction Method Statement developed in consultation with appropriate agencies prior to construction.</p> <p>Toolbox talks would be given to contractors and other relevant personnel. An Ecological Clerk of Works would oversee works with greatest potential to cause disturbance.</p> <p>A lighting plan for construction works would be implemented which would minimise light spill on to foraging areas and prevent light spill on to known roosts.</p> <p>As far as is practicable, appropriate buffers from construction works would be applied to known roosts. Where buffers cannot reasonably be applied to roosts, method statements for undertaking works in an ecologically sensitive manner would be developed. Where negative impacts cannot be sufficiently avoided through standard mitigation practices, an EPSL may be required to facilitate construction works.</p>

**Table 7-10: Biodiversity - Effects and mitigation on otter – Construction**

Receptor – Otter
<p><i>Nature of Effect:</i></p> <p>New watercourse crossings and upgrading of existing crossings, would be required to facilitate development of the Scheme; as such, negative effects could occur during construction, which may include loss of habitat (terrestrial and aquatic) through land-take; severance, by dividing habitats or wildlife corridors; vibration, noise, lighting or pollution of watercourses.</p>
<p><i>Duration:</i></p> <p>During the two-year construction period.</p>
<p><i>Mitigation:</i></p> <p>Additional mitigation to those in paragraph 4.3.3, would include the preparation of a CEMP containing Scheme specific commitments to reduce adverse effects and a Construction Method Statement, both of which would be developed in consultation with appropriate agencies prior to construction.</p> <p>Toolbox talks would be given to contractors and other relevant personnel. An Ecological Clerk of Works would oversee works with greatest potential to cause disturbance.</p>

**Operation**

7.4.4 Potential operational impacts to most receptors comprise elements similar to those during construction, although it is acknowledged that impacts would arise from different sources and, in many cases, to a lesser extent. Potential for negative effects during the operation of the Scheme include:

- 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)

**Table 7-11: Biodiversity - Effects and mitigation on Statutory and non-statutory designated sites – Operation**

Receptor – Statutory and non-statutory designated sites
<p><i>Nature of Effect:</i>                      Operational effects would be limited to: direct mortality to qualifying species through traffic collisions; barrier effects; and, water pollution.</p>
<p><i>Duration:</i>                      The lifetime of the Scheme.</p>
<p><i>Mitigation:</i>                      Mitigation proposed for qualifying species would also serve to mitigate impacts to designated sites. Measures to mitigate impacts to water quality are described in Section 11 and are not repeated here.</p>

**Table 7-12: Biodiversity - Effects and mitigation on Protected or notable habitats – Operation**

Receptor – Protected or notable habitats
<p><i>Nature of Effect:</i>                      No further habitat loss would be experienced during the operational phase of the Scheme. Operational effects are therefore only likely to comprise water pollution.</p>
<p><i>Duration:</i>                      The lifetime of the Scheme.</p>
<p><i>Mitigation:</i>                      Measures to mitigate impacts to water quality are described in Section 11 and are not repeated here.</p>

**Table 7-13: Biodiversity - Effects and mitigation on great crested newt – Operation**

Receptor – Great crested newt
<p><i>Nature of Effect:</i></p> <p>Negative effects comprise: direct mortality through traffic collisions, air and water pollution and barrier effects.</p>
<p><i>Duration:</i></p> <p>The lifetime of the Scheme.</p>
<p><i>Mitigation:</i></p> <p>Additional mitigation measures to that in paragraph 4.3.3 include the installation of compensatory ponds would increase the availability of this habitat within the study area. Additionally, vegetation planting installed for noise and landscape mitigation would increase terrestrial habitat quality and connectivity in the study area.</p> <p>Culverts and underpasses installed for other receptors would also increase the permeability of the road for great crested newts.</p>

**Table 7-14: Biodiversity - Effects and mitigation on wintering/passage birds – Operation**

Receptor – Wintering/passage birds
<p><i>Nature of Effect:</i></p> <p>Potential operational impacts primarily relate to: direct mortality through traffic collisions; visual disturbance; disturbance due to road traffic noise; impacts on species through road lighting and; barrier effects.</p>
<p><i>Duration:</i></p> <p>The lifetime of the Scheme.</p>
<p><i>Mitigation:</i></p> <p>Additional mitigation to that proposed in paragraph 4.3.3 includes establishing areas of compensatory habitat of value to wintering / passage birds in the vicinity of the Scheme.</p> <p>Vegetation planting installed for landscape mitigation would also serve to limit visual disturbance to wintering / passage birds - refer to Figure 16.1 at Appendix A.</p>

**Table 7-15: Biodiversity - Effects and mitigation on breeding birds – Operation**

Receptor – Breeding birds
<p><i>Nature of Effect:</i></p> <p>Operational impacts primarily relate to: direct mortality through traffic collisions, visual disturbance, disturbance due to road traffic noise, impacts on species through road lighting and barrier effects.</p>
<p><i>Duration:</i></p> <p>The lifetime of the Scheme.</p>



Receptor – Breeding birds
<p><i>Mitigation:</i>                      Additional mitigation to that proposed in paragraph 4.3.3 includes establishing areas of compensatory habitat of value to breeding birds in the vicinity of the Scheme as noted in Table 7-4.                      Vegetation planting installed for landscape mitigation would also serve to limit visual disturbance to breeding birds as well as providing additional nesting habitat - refer to Figure 16.1 at Appendix A.</p>

**Table 7-16: Biodiversity - Effects and mitigation on bats – Operation**

Receptor – Bats
<p><i>Nature of Effect:</i>                      Potential operation impacts include direct mortality through traffic collisions, impacts on species through road lighting and barrier effects.</p>
<p><i>Duration:</i>                      The lifetime of the Scheme.</p>
<p><i>Mitigation:</i>                      Road lighting would be designed to minimise light spill. Underpasses would be installed along key flight corridors to increase the permeability of the Scheme for bats and reduce the barrier effect. Additionally, vegetation planting installed for landscape mitigation would increase terrestrial habitat quality and connectivity in the study area - refer to Figure 16.1 at Appendix A.</p>

**Table 7-17: Biodiversity - Effects and mitigation on otters– Operation**

Receptor – Otter
<p><i>Nature of Effect:</i>                      Potential operation impacts include mortality through traffic collisions, polluted road runoff affecting the water environment, impacts through the barrier effect.</p>
<p><i>Duration:</i>                      The lifetime of the Scheme.</p>
<p><i>Mitigation:</i>                      Culverts, designed in line with DMRB, to enable otters to pass under the Scheme would be installed at new watercourse crossings, thereby increasing the permeability of the Scheme and minimising the barrier effect. Fencing would be installed to direct otters toward culverts and deter them from accessing the road. Additionally, vegetation planting installed for landscape mitigation would increase terrestrial habitat quality and connectivity in the study area – refer to Figure 16.1 at Appendix A. Water pollution would be mitigated through standard water quality management measures, detailed in Section 11, that would be implemented and monitored during the life of the Scheme.</p>

## **8 LANDSCAPE**

### **8.1 Introduction**

- 8.1.1 This Section provides the landscape baseline data, identifies additional data to be obtained and indicates potential effects (during construction and operation) as well as mitigation measures that may be required in order to avoid, reduce and, if possible, remedy significant adverse effects.
- 8.1.2 This Section should be read together with Figures 8.1a Key Visual Receptors, Landscape Designations, Zone of Theoretical Visibility within 2km Study Area, and Representative Viewpoint Locations, 8.1b Zone of Theoretical Visibility beyond 2km Study Area, and Representative Viewpoint Locations, 8.2 Scheme Level Character Areas, 8.3 Representative Viewpoints - Winter and Summer Views (18 Sheets), 8.4 Representative Viewpoints - Night-time Environment (6 Sheets), 8.5 Representative Photomontages (2 Sheets) and 16.1 Draft Environmental Mitigation at Appendix A.

### **8.2 Existing Environmental Conditions**

- 8.2.1 The Study Area for landscape and townscape assessment extends to a 1km radius from the Scheme boundary (refer to Figure 8.2), and up to 2km for visual assessment (refer to Figure 8.1a and 8.1b). To refine the assessment, a Zone of Theoretical Visibility (ZTV) has been generated for an area extending to 5km (Figure 8.1b) and this represents the theoretical area from which any part of the proposed development may be seen. This identifies visibility up to these distances, however it is considered that beyond the 2km Study Area, the proposed development would not be readily perceptible within the wider landscape and therefore this has formed the basis for the assessment of and visual amenity.
- 8.2.2 At the national level, the application site falls entirely within National Character Area (NCA) 32: Lancashire and Amounderness Plain (NE512), National Character Area Profile, Natural England, 2012). The NCA covers an area of high-grade agricultural land, located within the Fylde coast. This is considered to be a distinct area, with extensive views available across the plain. There are small to medium-sized blocks of mixed woodland, and medium to large-sized fields that form an open, large-scale agricultural landscape. It contains a complex network of drainage ditches and dykes, and significant urban areas, with a recognized tourism offer.
- 8.2.3 The Scheme lies within the authorities of Fylde Borough and Wyre Borough Council, and within Lancashire County Council (LCC). At the local level LCC's A Landscape Strategy for Lancashire, Supplementary Planning Guidance (SPG) (Lancashire County Council, 2000) provides the Landscape Character Types (LCTs) across the study area.
- 8.2.4 There are three local LCTs within the 1km study area. The LCTs are further subdivided into local Landscape Character Areas (LCAs). The LCTs and LCAs relevant to the study area are presented in Table 8-1.

**Table 8-1: Landscape - Local Landscape Character Types**

LCT	Description
Character Type 15 - Coastal Plain	The majority of the study area is located within this LCT, and it is described as a gently undulating or flat lowland farmland separated by ditches to the west and low clipped hedges elsewhere. This LCT is defined by LCA <b>15d, The Fylde</b> . This is an extensive LCA which covers the gently undulating farmland of the Fylde 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 of this area and provide important wildlife habitats.
Character Type 18: Open Coastal Marsh	The northern edge of the study area is located within this LCT, and it is described as comprising salt marshes and intertidal flats which occur around the sheltered waters of the west coast of Lancashire and extend to the low water mark. This LCT is defined by LCA <b>18c – Wyre Marshes</b> . This LCA covers the Wyre Estuary, extending upstream from the coast at Fleetwood in the north to an area north east of Little Singleton and comprises sheltered salt marsh and intertidal flats. 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.
Urban Landscape Type: Suburban.	The townscape resource within the study area is located within this LCT.

8.2.5 With reference to the published local scale LCA descriptions a Scheme-specific landscape character study has been prepared. As such the study area has been sub divided into seven LCAs and nine townscape character areas (TCAs) based on their physical and cultural elements. Their locations are shown on Figure 8.1 at Appendix A and descriptions are outlined in Table 8-2.

**Table 8-2: Landscape - Scheme Level Character Areas**

Scheme Level Landscape / Townscape Character Areas	Description
<b>Landscape</b>	
LCA 1: Thornton Farmed Hinterland	Gently undulating enclosed farmland located in the north of the study area between Little Thornton and Poulton, incorporating Wyre Borough Greenbelt.  Key Features: Pastoral agriculture with medium-scale regular field pattern, disrupted by infrastructure (electricity pylons, Highway and railway line) and interspersed by hedgerows with hedgerow trees.

Scheme Level Landscape / Townscape Character Areas	Description
LCA 2: Thornton Hall and Estate land	<p>Estate landscape including a recreational golf course located in the north of the study area between Little Thornton and Poulton, incorporating Wyre Borough Greenbelt.</p> <p>Key Features: A small-scale enclosed landscape with estate woodland planting, and tree groups (associated with the golf course) defining features.</p>
LCA 3: Wyre Estuary Farmed Hinterland	<p>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, and also east of the Wyre Estuary.</p> <p>Key Features: Small to medium scale predominately arable fields (with occasional pastoral) laid in a semi regular pattern bounded by gappy hedgerows, with occasional small woodland copses located around field ponds, and larger woodland blocks.</p>
LCA 4: Main Dyke Farmland	<p>Low-lying river valley and flood plain farmland west of the A585 between Skippool, east of Poulton-le-Fylde in the north and A586 / and Poulton Industrial Estate in the south.</p> <p>Key Features: Wooded river corridor, which dissects an irregular pattern of medium scale pastoral fields, which are bounded by gappy hedgerows with occasional hedgerow trees, woodland blocks, and field ponds.</p>
LCA 5: Singleton Enclosed Farmland	<p>Gently undulating enclosed farmland within the south part of the study area between the A585 and the village of Singleton.</p> <p>Key Features: Medium to large scale predominately pastoral fields (with occasional arable) laid in a semi regular pattern bounded by gappy hedgerows, with occasional small woodland copses located around field ponds, and larger woodland blocks.</p>
LCA 6: Singleton Hall and Parkland	<p>Intimate designed landscape in the south part of the study area immediately east of the B5260.</p> <p>Key Features: A small-scale enclosed landscape containing areas of amenity grassland, interspersed with estate woodland planting, which is a defining feature.</p>
Townscape	
TCA 1: Thornton	<p>Thornton and Thornton Cleveleys, a predominately late 19th Century residential development which grew as a result of the arrival of the railway and salt works in the mid-1800s.</p>
TCA 2: Carleton	<p>Suburban townscape encompassing Great Carleton, Little Carleton, Norcross and Whiteholme, centred on the junction of</p>

Scheme Level Landscape / Townscape Character Areas	Description
	the B5266 Blackpool Road, the B5267 Tithebarn Street, and Fleetwood Road, incorporating early and mid-20 <sup>th</sup> Century ribbon development and late 20 <sup>th</sup> Century residential estate development.
TCA 3: Skippool Bridge	Suburban townscape encompassing the junction of the A588 Breck Road, and A585 Mains Lane including a mix of mid to late 20 <sup>th</sup> century residential estate development with a high proportion of bungalow properties interspersed with occasional older buildings. Early 20 <sup>th</sup> Century properties include Thornton Lodge, and Barton House, at the junction of Mains Road, and Breck Road.
TCA 4: Skippool and Little Poulton	Suburban townscape located to the west of Main Dyke, incorporating Poulton-le-Fylde, incorporating early, and mid-20 <sup>th</sup> Century ribbon development along Breck Road, and late 20 <sup>th</sup> Century residential estate development. to the wider area.
TCA 5: A585 Mains Lane	Mid to late 20 <sup>th</sup> Century residential ribbon development along the A585 between Skippool and Little Singleton with individual properties (Manor House Farm, Shard Bridge Farm, and The Croft) from the early 20 <sup>th</sup> Century.
TCA 6: Poulton Industrial Estate	Industrial townscape located west of Main Dyke comprising large-scale built form.
TCA 7: Little Singleton	Post war mid-20 <sup>th</sup> Century residential ribbon development, centred on the busy junction of the A585 and A586.
TCA 8: Singleton	19 <sup>th</sup> century residential ribbon development with a recognised historic character along Station Road, and Church Road incorporating a number of Listed Buildings.
TCA 9: Windy Harbour	A medium-scale caravan park containing permanent and temporary caravans, set within an enclosed area bounded by semi mature woodland, located immediately adjacent to the Wyre Estuary, where the edge treatment is open.

8.2.6 The Scheme falls within LCA 4, LCA 5, LCA 6, TCA 3, TCA 5, and TCA 7, and as a result their character and / or features would be directly impacted. The landscape and townscape receptors' sensitivity would be considered individually as part of the Environmental Statement to account for the condition / quality, value and susceptibility to accommodate change of the type proposed.

8.2.7 LCAs 1-3, and TCAs 1-2, 4, 6, 8, and 9, have been discounted as the Scheme would not result in a direct physical impact on the features or the overall quality or condition of these character areas.



- 8.2.8 Site visits were undertaken during summer and winter 2017, to record the visual amenity, to establish the likely visual influence of the Scheme, and identify potential visual receptors with a view to it.
- 8.2.9 Seventeen representative viewpoints were agreed with Fylde Borough and Wyre Borough Council in August 2017, as summarised in Table 8-3, and their locations are presented within Figure 8.1a at Appendix A. The summer and winter view photographs for the 17 viewpoints are shown in Figure 8.3 at Appendix A. Four viewpoints (2, 7, 9 and 10) were agreed to be presented with Fylde Borough Council in this PEIR as photomontages, however, photomontage 9 has not been presented. The three photomontages provided demonstrate representative potential effects at year 15 and are presented in Figure 8.5 at Appendix A.
- 8.2.10 The night time landscape of the study area has also been considered and the site visits also recorded the environmental lighting zones baseline conditions. Ten of the 17 viewpoints have been presented as a representation of the night time landscape (1, 2, 5, 6, 7, 9, 10, 13, 14 and 16), and are presented in Figure 8.4 at Appendix A. With reference to the Lighting Research Center's work on Light Pollution, 2007, this area is considered to fall between Environmental Lighting Zone E2: Areas of low ambient brightness and Zone E3: Outer urban or rural residential areas. This would be confirmed during the environmental assessment.
- 8.2.11 In addition to the 17 viewpoints agreed and presented within the PEIR, a further four representative viewpoints would be presented within the Environmental Statement. Three of these viewpoints are located beyond the 2km Study Area to demonstrate the potential impacts from these distances, with the fourth representative viewpoint located at the Ice House as recommended by the Planning Inspectorate. Table 8-4 summarises the viewpoints which are presented in Figures 8.1a, and 8.1b.

**Table 8-3: Landscape - Representative Viewpoints**

Representative Viewpoints	Winter and Summer Views presented (Figure 8.3)	Night Time Views presented (Figure 8.4)	Photomontage presented (Figure 8.5)
Viewpoint 1: View from Breck Road / Wyre Way at the A585, looking south east.	✓	✓	
Viewpoint 2: View from residential properties on Breck Road, looking north west.	✓	✓	✓
Viewpoint 3: View from residential properties on Old Mains Lane, looking south.	✓		
Viewpoint 4: View from the A585 Mains Lane, looking west.	✓		



Representative Viewpoints	Winter and Summer Views presented (Figure 8.3)	Night Time Views presented (Figure 8.4)	Photomontage presented (Figure 8.5)
Viewpoint 5: View from PRoW 5-11-FP-8, looking north east.	✓	✓	
Viewpoint 6: View from residential properties on Little Poulton Lane, looking east.	✓	✓	
Viewpoint 7: View from the A586 Garstang Road East, adjacent to residential properties, looking east.	✓	✓	✓
Viewpoint 8: View from PRoW 5-11-FP-6, looking north east.	✓		
Viewpoint 9: View from PRoW 5-11-FP-2, where it crosses the A585 Garstang New Road, looking south east.	✓	✓	
Viewpoint 10: View from the B5260 Lodge Lane, looking north east (a), and north west (b).	✓	✓	✓
Viewpoint 11: View from the A585 Mains Lane, adjacent to residential properties, looking south.	✓		
Viewpoint 12: View from the Wyre Way at the crossing with the A588 Shard Road, looking south.	✓		
Viewpoint 13: View from the A588 Shard Road adjacent to Shard Bridge Farm, looking south.	✓	✓	
Viewpoint 14 (A-VP1): View from the A586 Garstang Road adjacent to residential properties, looking west.	✓	✓	
Viewpoint 15 (A-VP2): View from Singleton Farm on Carr Lane, looking north.	✓		
Viewpoint 16 (A-VP3): View from Grange Road, looking north west.	✓	✓	
Viewpoint 17 (A-VP4): View from Wyre Way at the junction with Wyre Road adjacent to residential properties, looking south.	✓		

**Table 8-4: Landscape - Representative Viewpoints (not presented within the PEIR)**

Representative Viewpoints	Winter and Summer Views
Viewpoint 18 (B-VP1): View from the Ice House at Singleton Manor, looking north.	✓
Viewpoint 19 (B-VP2): View from PRoW FP 5, 12,4.	✓
Viewpoint 20 (B-VP3): View from PRoW FP 2,4,22.	✓
Viewpoint 21 (B-VP4): View from PRoW FP 5,6,1.	✓

8.2.12 The 2km Study Area contains a relatively low-density network of PRoW and the recreational route which forms part of the regional long-distance Wyre Way. Within the Study Area this runs along the south bank of the Wyre Estuary as far as Little Singleton, as well as a section on its north and eastern bank.

8.2.13 The 2km Study Area also contains a range of residential properties, present as either scattered rural properties and farmsteads, or within associated settlements such as small villages and suburban areas.

**Key Environmental Receptors**

8.2.14 The key landscape and visual receptors are summarised in Table 8-5. Only those landscape and townscape receptors which fall within the footprint of the Scheme (and as such would be directly impacted), and those visual receptors which fall within the ZTV within the 1km of the Scheme have been identified.

**Table 8-5: Landscape - Key Environmental Receptors**

Receptor
<b>Landscape resource</b>
LCA 4: Main Dyke Farmland
LCA 5: Singleton Enclosed Farmland
LCA 6: Singleton Hall and Parkland
<b>Townscape resource</b>
TCA 3: Skippool Bridge
TCA 5: A585 Mains Lane
TCA 7: Little Singleton

Receptor
<b>Visual amenity resource</b>
Bay Court
PRoW – 2-4-FP-11
Prospect Farm
Residential Properties at junction of B5412, and A585 Amounderness Way
B5412 Skippool Road and Wyre Road, including residential properties
PRoW – 2-4-FP-10
Wyre Way at junction with A585
Breck Road, including residential properties
Mains Lane at Skippool Bridge, including residential properties
PRoW – 5-11-FP-8
Old Mains Lane at Skippool Bridge, including residential properties
PRoW – 5-11-FP-6
Residential Properties on the suburban edge of Skippool and Little Poulton - Kevin Avenue, Riversway, Fouldrey Avenue, Breck Road, Moorland Avenue, The Spinney, Moorland Road, and Moorway.
Residential Properties along Little Poulton Lane
PRoW – 2-2-FP-2 and 2-2-FP-3
Residential Properties along Garstang Road East
Poulton Industrial Estate
Mains Hall, Toll House and Shard Bridge Farm, and PRoW 5-11-FP-6
Shard Bridge / Shard Road
Residential Properties along Mains Lane from Old Mains Lane to Little Singleton junction
Residential Properties along Garstang Road East at Little Singleton
Residential Properties along Pool Foot Lane, Occupation Lane, and Honeypot Lane
Wyre Way (on northern banks of River Wyre), and Bank House
PRoW - 5-11-FP-2
Bankfield Manor
Pointer House, Old Castle, and Kirkham I' th' Fields
Grange Road
Grange Farm
PRoW – 5-6-FP-13
Singleton Hall, Singleton Park, Lodge Farm, Barnfield Manor

Receptor
B5260 Lodge Lane including Residential Properties
Residential Village settlement of Singleton - Mount and Singleton Farm, and properties on Station and Church Road, and NCN Route 90
PRoW – 5-11-FP-6
A585 Fleetwood Road

8.2.15 Only those receptors considered to experience potential significant effects (highlighted in grey) are considered below in Section 8.4. Please note, however, that all visual receptors identified together with those failing within the ZTV of the 2km Study Area would be considered during the assessment process, which would be submitted in support of the DCO application.

**8.3 Other baseline information to be obtained / surveys to be undertaken and limitations**

8.3.1 Tree Preservation Orders (TPOs) have been identified within the study area. The exact location of these would be confirmed in the ES.

**8.4 Potential Effects and Mitigation Measures**

**Aspects Scoped into and out of the Assessment**

8.4.1 The following aspects have been scoped into the EIA on the basis that potentially significant effects cannot be ruled out at this stage:

- Effects during construction and operation on landscape, townscape and visual amenity, focussing on character areas and visual receptors within the ZTV within the 2km Study Area that are considered to be potentially significantly affected by the Scheme. A series of representative viewpoints has been agreed with Fylde Borough and Wyre Borough Councils. Other non-significant impacts have been scoped out.

8.4.2 The potential effects of the Scheme during construction and operation and the measures proposed to manage them are outlined in Tables 8-6 to 8-24.

**Construction**

**Table 8-6: Landscape - Effects and mitigation on LCA 6: Singleton Hall and Parkland (as represented by VP 10) – Construction**

Landscape Receptor - LCA 7: Singleton Hall and Parkland (as represented by VP 10)
<p><i>Nature of Effect:</i></p> <p>The receiving landscape would experience loss of some important local landscape features associated with Singleton Hall, including groups of mature trees (location of TPOs to be confirmed), the severance of the main access from the gate house on the local road, and alteration to the existing topography and landform (Scheme in a cutting). The designed estate /</p>

<b>Landscape Receptor - LCA 7: Singleton Hall and Parkland (as represented by VP 10)</b>
parkland contains unique local features which would be lost as a result of construction activity.
<i>Duration:</i> During the two-year construction period.
<i>Mitigation:</i> Additional mitigation to that outlined in paragraph 4.3.3 would include the implementation of Scheme specific commitments within a CEMP during construction. This could include commitments such as installation of 3m high perimeter solid hoarding around the construction area boundary, the introduction of topsoil storage mounds as screening features and baffles on lighting columns.

**Table 8-7: Landscape - Effects and mitigation on Residential Properties at junction of B5412, and A585 Amounderness Way (as represented by VP 1)– Construction**

<b>Visual Amenity Receptor – Residential Properties at junction of B5412, and A585 Amounderness Way (as represented by VP 1)</b>
<i>Nature of Effect:</i> The occupiers located within TCA 3 Skippool Bridge would experience south easterly views from first story windows to activity in the foreground associated with the reconfiguration of the roundabout junction at Mains Lane / Amounderness Way. This view could potentially include storage areas, night time light sources, noise, and movement of plant. It is considered these activities, albeit short term / temporary in nature would be prominent in the foreground of the view.
<i>Duration and Mitigation:</i> Refer to Table 8-6.

**Table 8-8: Landscape - Effects and mitigation on Wyre Way at junction with A585 (as represented by VP 1) – Construction**

<b>Visual Amenity Receptor - Wyre Way at junction with A585 (as represented by VP 1)</b>
<i>Nature of Effect:</i> Users of the Wyre Way within LCA 3 Wyre Estuary Farmed Hinterland, would experience a series of sequential southerly views as they approach the A585 within TCA 3 Skippool Bridge, culminating in a close-range view of the Scheme. Views of the construction activities could potentially include storage areas, night time light sources, noise, and movement of plant. It is considered these new activities, albeit being short term / temporary in nature would be noticeable features visible within the foreground occupying a large proportion of the view.
<i>Duration and Mitigation:</i> Refer to Table 8-6.

**Table 8-9: Landscape - Effects and mitigation on Breck Road, including residential properties (as represented by VP 2) – Construction**

<b>Visual Amenity Receptor - Breck Road, including residential properties (as represented by VP 2)</b>
<p><i>Nature of Effect:</i></p> <p>The occupiers within TCA 3 Skippool Bridge would experience north westerly and north easterly views from ground floor windows to activity in the foreground associated with the reconfiguration of the roundabout junction at Mains Lane / Amounderness Way, and the A585 Mains Lane widening on the approaches to Skippool Bridge. This could potentially include storage areas, night time light sources, noise, and movement of plant. It is considered these new activities, albeit being short term / temporary in nature would be prominent in the foreground of the view.</p>
<p><i>Duration and Mitigation:</i></p> <p>Refer to Table 8-6.</p>

**Table 8-10: Landscape - Effects and mitigation on Mains Lane at Skippool Bridge, including residential properties (as represented by VP 4) – Construction**

<b>Visual Amenity Receptor - Mains Lane at Skippool Bridge, including residential properties (as represented by VP 4)</b>
<p><i>Nature of Effect:</i></p> <p>The occupiers within TCA 5 A585 Mains Lane would experience southerly views from first floor rear elevation windows to activity in the foreground associated with the construction of the Scheme within LCA 5 Mains Dyke Farmland, and potentially first floor views from the front elevation windows of the A585 Mains Lane widening. This could potentially include storage areas, night time light sources, noise, and movement of plant. It is considered these new activities, albeit being short term / temporary in nature would be prominent in the foreground of the view.</p>
<p><i>Duration and Mitigation:</i></p> <p>Refer to Table 8-6.</p>

**Table 8-11: Landscape - Effects and mitigation on PRow – 5-11-FP-8 (as represented by VP 5) – Construction**

<b>Visual Amenity Receptor - PRow – 5-11-FP-8 (as represented by VP 5)</b>
<p><i>Nature of Effect:</i></p> <p>Users on the PRow where they traverse LCA 5 Mains Dyke Farmland would experience a series of sequential views for a short section of the route as it follows Mains Dyke, with close-range views of the Scheme construction. This could potentially include storage areas, night time light sources, noise, and movement of plant.</p> <p>It is considered these new activities, albeit being short term / temporary in nature would be prominent features visible within the foreground occupying a large proportion of the view.</p>



**Visual Amenity Receptor - PRoW – 5-11-FP-8 (as represented by VP 5)**

*Duration and Mitigation:*

Refer to Table 8-6.

**Table 8-12: Landscape - Effects and mitigation on Old Mains Lane at Skippool Bridge, including residential properties (as represented by VP 3) – Construction**

**Visual Amenity Receptor - Old Mains Lane at Skippool Bridge, including residential properties (as represented by VP 3)**

*Nature of Effect:*

The occupiers within TCA 3 Skippool Bridge would experience southerly views from first floor front elevation windows to activity in the foreground associated with the Scheme construction between the existing A585 Mains Lane and the approaches to Skippool Bridge. This would result in the loss of existing roadside bounding vegetation, and could potentially introduce, new night time light sources, noise, and movement of plant. It is considered these new activities, albeit being short term / temporary in nature would be noticeable within the foreground of the view.

*Duration and Mitigation:*

Refer to Table 8-6.

**Table 8-13: Landscape - Effects and mitigation on Residential Properties along Little Poulton Lane (as represented by VP 6) – Construction**

**Visual Amenity Receptor - Residential Properties along Little Poulton Lane (as represented by VP 6)**

*Nature of Effect:*

The occupiers within TCA4 Skippool and Little Poulton would experience north easterly views from first storey front elevation windows to activity in the midground associated with the construction of the Scheme within LCA 5 Mains Dyke Farmland. This could potentially include storage areas, new night time light sources, noise, and movement of plant. It is considered these new activities, albeit being short term / temporary in nature would be noticeable in the mid ground of the view.

*Duration and Mitigation:*

Refer to Table 8-6.

**Table 8-14: Landscape - Effects and mitigation on Residential Properties along Garstang Road East (as represented by VP 7) – Construction**

**Visual Amenity Receptor - Residential Properties along Garstang Road East (as represented by VP 7)**

*Nature of Effect:*

The occupiers on the edge of TCA 6 Poulton Industrial Estate, and adjacent to LCA 4 Main Dyke Farmland would experience easterly views from first storey front elevation windows to activity in the midground associated with the construction of the Scheme within LCA 5 Mains Dyke Farmland, and the

**Visual Amenity Receptor - Residential Properties along Garstang Road East (as represented by VP 7)**

installation of the new roundabout junction at Garstang Road. This could potentially include storage areas, new night time light sources, noise, and movement of plant. It is considered these new activities, albeit being short term / temporary in nature would be noticeable in the midground view.

*Duration and Mitigation:*

Refer to Table 8-6.

**Table 8-15: Landscape - Effects and mitigation on Visual Amenity Receptor - Residential Properties along Garstang Road at Little Singleton (as represented by VP 14) – Construction**

**Visual Amenity Receptor - Residential Properties along Garstang Road East at Little Singleton (as represented by VP 14)**

*Nature of Effect:*

The occupiers, at properties located on the south edge of TCA 7 Little Singleton, would experience southerly views from first floor rear elevation windows, albeit partially filtered by intervening vegetation. These receptors, worst case, could potentially experience views of activity in the foreground associated with the construction of the Scheme within the adjacent LCA 6 Singleton Enclosed Farmland. This could potentially include storage areas, new light sources, noise, and movement of plant. It is considered these new activities, albeit being short term / temporary in nature would be noticeable in some foreground views.

*Duration and Mitigation:*

Refer to Table 8-6.

**Table 8-16: Landscape - Effects and mitigation on Singleton Hall, Singleton Park, Lodge Farm, and Barnfield Manor – Construction**

**Visual Amenity Receptor - Singleton Hall, Singleton Park, Lodge Farm, and Barnfield Manor**

*Nature of Effect:*

The occupiers, at properties set within LCA 6 Singleton Hall and Parkland would experience northerly views from first floor windows across a designed parkland. Designed features such as tree clumps and tree lines would potentially be affected. Views, worst-case, could experience views of activity in the fore and midground and could potentially including storage areas, new night time light sources, noise, and movement of plant. It is considered these new activities, albeit being short term / temporary in nature would be prominent in the fore and mid ground views.

*Duration and Mitigation:*

Refer to Table 8-6.

**Table 8-17: Landscape - Effects and mitigation on B5260 Lodge Lane including Residential Properties (as represented by VP 10) – Construction**

Visual Amenity Receptor - B5260 Lodge Lane including Residential Properties (as represented by VP 10)
<p><i>Nature of Effect:</i></p> <p>The occupiers within LCA 6 Singleton Hall and Parkland, and users of Lodge Lane on the edge of LCA 6 and adjacent to LCA 5 Singleton Enclosed Farmland would experience easterly and westerly views of activity including the loss of the hedgerow bounding vegetation along Lodge Lane, opening up views across the wider farm and parkland landscape. Construction activities associated with the adjacent cutting would be prominent in the fore and midground. Views could potentially also include storage areas, new night time light sources, noise, and movement of plant. It is considered these new activities, albeit being short term in nature would be prominent in the fore and mid ground views.</p>
<p><i>Duration and Mitigation:</i></p> <p>Refer to Table 8-6.</p>

**Operation**

**Table 8-18: Landscape - Effects and mitigation on LCA 7: Singleton Hall and Parkland – Operation**

Landscape Receptor - LCA 7: Singleton Hall and Parkland
<p><i>Nature of Effect:</i></p> <p>The Scheme and associated traffic would be in a deep cutting as it passes through the northern edge of this character area. With mitigation, this would result in the initial severance due to the loss of existing woodland within the park / estate land, together with hedgerows, and agricultural land. Over time as mitigation establishes (as described below) this severance together with the loss of features would be reduced.</p>
<p><i>Duration:</i></p> <p>During establishment of mitigation (approx. 15 years), and then the lifetime of the Scheme.</p>
<p><i>Mitigation:</i></p> <p>In addition to mitigation in paragraph 4.3.3 the following is proposed:                  New woodland belt planting along the proposed cutting slopes, and off-site woodland block planting within the wider parkland landscape to help off-set the loss of parkland tree groups – refer to Figure 16.1 at Appendix A.</p>

**Table 8-19: Landscape - Effects and mitigation on Residential Properties at junction of B5412, and A585 Amounderness Way – Operation**

Visual Amenity Receptor – Residential Properties at junction of B5412, and A585 Amounderness Way
<p><i>Nature of Effect:</i></p> <p>The occupier would experience easterly views from first story windows to the roundabout junction at Mains Lane / Amounderness Way and associated traffic in the foreground.</p> <p>With mitigation (as described below) and given the presence of the existing A585 and its traffic, it is not considered the Scheme would result in a significant impact. Furthermore, the nature of effect would reduce over time as the mitigation establishes and integrates the Scheme into the townscape character area.</p>
<p><i>Duration:</i></p> <p>During establishment of mitigation (approx. 15 years), and then the lifetime of the Scheme.</p>
<p><i>Mitigation:</i></p> <p>In addition to mitigation in paragraph 4.3.3 the following is proposed:                      Installation / replacement of grass verges with trees, to retain existing townscape character – refer to Figure 16.1 at Appendix A.</p>

**Table 8-20: Landscape - Effects and mitigation on Wyre Way at junction with A585 (as represented by VP 1) – Operation**

Visual Amenity Receptor - Wyre Way at junction with A585 (as represented by VP 1)
<p><i>Nature of Effect:</i></p> <p>Users on the Wyre Way would experience a series of sequential southerly views as they approach the A585, culminating in a close-range view of the new junction configuration.</p> <p>With mitigation (as described below) and given the presence of the existing A585 and its traffic, it is not considered the Scheme would result in a significant impact. Furthermore, the nature of effect would reduce over time as the mitigation establishes and integrates the Scheme into the townscape character area.</p>
<p><i>Duration:</i></p> <p>During establishment of mitigation (approx. 15 years), and then the lifetime of the Scheme.</p>
<p><i>Mitigation:</i></p> <p>In addition to mitigation in paragraph 4.3.3 the following is proposed:                      Installation / replacement of grass verges with trees, to retain existing townscape character, and buffer to the Wyre Way – refer to Figure 16.1 at Appendix A. Introduction of gateway feature / waymarking to announce Wyre Way at this location.</p>

**Table 8-21: Landscape - Effects and mitigation on Breck Road, including residential properties (as represented by VP 2) – Operation**

<b>Visual Amenity Receptor - Breck Road, including residential properties (as represented by VP 2)</b>
<p><i>Nature of Effect:</i></p> <p>The occupiers would experience north westerly and north easterly views from ground floor windows of the new junction at Mains Lane / Amounderness Way, along with the widening of the A585 Mains Lane as it approaches Skippool Bridge and associated traffic.</p> <p>With mitigation (as described below) and given the presence of the existing A585 and its traffic, it is not considered the Scheme would result in a significant impact. Furthermore, the nature of effect would reduce over time as the mitigation establishes and integrates the Scheme into the townscape character area.</p>
<p><i>Duration:</i></p> <p>During establishment of mitigation (approx. 15 years), and then the lifetime of the Scheme.</p>
<p><i>Mitigation:</i></p> <p>In addition to mitigation in paragraph 4.3.3 the following is proposed:                      Installation / replacement of grass verges with trees, to retain existing townscape character, and buffer to the residential properties located along Breck Road – refer to Figure 16.1 at Appendix A.</p>

**Table 8-22: Landscape - Effects and mitigation on Mains Lane at Skippool Bridge, including residential properties (as represented by VP 4) – Operation**

<b>Visual Amenity Receptor - Mains Lane at Skippool Bridge, including residential properties (as represented by VP 4)</b>
<p><i>Nature of Effect:</i></p> <p>The occupiers would experience southerly views from first floor rear elevation windows of the Scheme and associated traffic as it traverses the adjacent LCA Mains Dyke Farmland, and potentially first floor views from the front elevation windows of the widened section of the A585 along Mains Lane. From the receptors’ rear windows, the Scheme with mitigation (as described below) would form a focal feature of the rural view forming a noticeable intrusive new feature. The nature of effect would reduce over time as the mitigation (vegetation) establishes and integrates the Scheme into the landscape.</p>
<p><i>Duration:</i></p> <p>During establishment of mitigation (approx. 15 years), and then the lifetime of the Scheme.</p>
<p><i>Mitigation:</i></p> <p>In addition to mitigation in paragraph 4.3.3 the following is proposed:                      New woodland block and hedgerow planting – refer to Figure 16.1 at Appendix A.</p>

**Table 8-23: Landscape - Effects and mitigation on PRoW – 5-11-FP-8 (as represented by VP 5) – Operation**

<b>Visual Amenity Receptor - PRoW – 5-11-FP-8 (as represented by VP 5)</b>
<p><i>Nature of Effect:</i></p> <p>Users on the PRoW where they traverse LCA 5 Mains Dyke Farmland would experience a series of close range sequential views for a short section of the route as it follows Mains Dyke. The Scheme, including associated traffic, and mitigation (as described below) would form a focal feature of the rural view and creating an intrusive new feature. The nature of effect would reduce over time as the mitigation (vegetation) establishes and integrates the Scheme into the landscape.</p>
<p><i>Duration:</i></p> <p>During establishment of mitigation (approx. 15 years), and then the lifetime of the Scheme.</p>
<p><i>Mitigation:</i></p> <p>In addition to mitigation in paragraph 4.3.3 the following is proposed:                  2.0m deep false cutting slopes with new woodland block and hedgerow planting – refer to Figure 16.1 at Appendix A.</p>

**Table 8-24: Landscape - Effects and mitigation on Old Mains Lane at Skippool Bridge, including residential properties (as represented by VP 3) – Operation**

<b>Visual Amenity Receptor - Old Mains Lane at Skippool Bridge, including residential properties (as represented by VP 3)</b>
<p><i>Nature of Effect:</i></p> <p>The occupiers would experience southerly views from first floor front elevation windows to the widened A585, with passing traffic being closer in open short-range views and as a result of the loss in the roadside vegetation. The Scheme, including traffic, and mitigation (as described below) would form a noticeable feature in the view. The nature of effect would reduce over time as the mitigation (vegetation) establishes and integrates the Scheme into the landscape.</p>
<p><i>Duration:</i></p> <p>During establishment of mitigation (approx. 15 years), and then the lifetime of the Scheme.</p>
<p><i>Mitigation:</i></p> <p>In addition to mitigation in paragraph 4.3.3 the following is proposed:                  New vegetation where possible to integrate with existing features and provide screening. Sympathetically designed retaining structure to be installed.</p>



**Table 8-25: Landscape - Effects and mitigation on Residential Properties along Little Poulton Lane (as represented by VP 6) – Operation**

<b>Visual Amenity Receptor - Residential Properties along Little Poulton Lane (as represented by VP 6)</b>
<p><i>Nature of Effect:</i></p> <p>The occupiers would experience north easterly views from first storey front elevation windows of the Scheme and traffic as it traverses the adjacent LCA 5 Mains Dyke Farmland. The Scheme, associated traffic, and mitigation (as described below) would form a focus of the rural view and a noticeable intrusive new feature. The nature of effect would reduce over time as the mitigation (vegetation) establishes and integrates the Scheme into the landscape.</p>
<p><i>Duration:</i></p> <p>During establishment of mitigation (approx. 15 years), and then the lifetime of the Scheme.</p>
<p><i>Mitigation:</i></p> <p>In addition to mitigation in paragraph 4.3.3 the following is proposed:                      To the west of the Scheme as it approaches Mains Lane, new woodland block and hedgerow planting. To the east of the Scheme as it approaches Garstang Road, new hedgerow planting along the westbound carriageway boundary and new woodland planting along the eastern carriageway boundary to integrate with existing woodland planting refer to Figure 16.1 at Appendix A.</p>

**Table 8-26: Landscape - Effects and mitigation on Residential Properties along Garstang Road East (as represented by VP 7) – Operation**

<b>Visual Amenity Receptor - Residential Properties along Garstang Road East (as represented by VP 7)</b>
<p><i>Nature of Effect:</i></p> <p>The occupiers would experience easterly views from first storey front elevation windows to the Scheme and associated traffic on the far side of Garstang Road and Mains Dyke, within the nearby LCA 5 Mains Dyke Farmland, and the new junction to the east on Garstang Road. It is considered that the Scheme's fore and midground features including mitigation (as described below) would create new noticeable features. The nature of effect would reduce over time as the mitigation (vegetation) establishes and integrates the Scheme into the landscape.</p>
<p><i>Duration:</i></p> <p>During establishment of mitigation (approx. 15 years), and then the lifetime of the Scheme.</p>
<p><i>Mitigation:</i></p> <p>In addition to mitigation in paragraph 4.3.3 the following is proposed:                      To the east of Garstang road, new woodland block and hedgerow planting. To the west of Garstang road, new hedgerow planting along the westbound carriageway boundary and new woodland planting along the eastern</p>

**Visual Amenity Receptor - Residential Properties along Garstang Road East (as represented by VP 7)**

carriageway boundary to integrate with existing woodland planting. New hedgerow planting to the roundabout junction on Garstang Road – refer to Figure 16.1. at Appendix A.

**Table 8-27: Landscape - Effects and mitigation on Residential Properties along Garstang Road East at Little Singleton (as represented by VP 14) – Operation**

**Visual Amenity Receptor - Residential Properties along Garstang Road East at Little Singleton (as represented by VP 14)**

*Nature of Effect:*

The occupiers at the properties located on the south edge of TCA 7 Little Singleton would experience southerly views from first floor rear elevation windows, albeit these being partially filtered by intervening vegetation. It is considered the Scheme, its traffic and the proposed mitigation (as described below) would create new noticeable features. The nature of effect would reduce over time as the mitigation (vegetation) establishes and integrates the Scheme into the landscape.

*Duration:*

During establishment of mitigation (approx. 15 years), and then the lifetime of the Scheme.

*Mitigation:*

In addition to mitigation in paragraph 4.3.3 the following is proposed:  
 2.0m deep false cutting slopes with new hedgerow planting south of Garstang Road East. Woodland planting along the cutting slopes as the Scheme approaches Lodge Lane – refer to Figure 16.1 at Appendix A.

**Table 8-28: Landscape - Effects and mitigation on Singleton Hall, Singleton Park, Lodge Farm, and Barnfield Manor – Operation**

**Visual Amenity Receptor - Singleton Hall, Singleton Park, Lodge Farm, and Barnfield Manor**

*Nature of Effect:*

The occupiers, at properties set within LCA 6 Singleton Hall and Parkland would at worst experience filtered northerly views from first floor windows across the severed designed parkland with noticeable gaps where the tree belts and tree clumps have been affected by the Scheme. It is considered the Scheme in the short term would create an intrusive prominent new feature in the midground view as a result of loss of vegetation. However, over time as mitigation (as described below) establishes this effect would be reduced.

*Duration:*

During establishment of mitigation (approx. 15 years), and then the lifetime of the Scheme.

**Visual Amenity Receptor - Singleton Hall, Singleton Park, Lodge Farm, and Barnfield Manor**

*Mitigation:*

In addition to mitigation in paragraph 4.3.3 the following is proposed:  
 Installation of visual and acoustic fencing, new woodland belt planting along the proposed cutting slopes and off-site woodland block planting within the wider parkland landscape to help off-set the loss of parkland tree groups – refer to Figure 16.1 at Appendix A.

**Table 8-29: Landscape - Effects and mitigation on B5260 Lodge Lane including Residential Properties (as represented by VP 10) – Operation**

**Visual Amenity Receptor - B5260 Lodge Lane including Residential Properties (as represented by VP 10)**

*Nature of Effect:*

The occupiers, and users of Lodge Lane would experience easterly and westerly views of the Scheme, which as a result of loss in the road side bounding hedgerows would open up views into the wider landscape. The new Lodge Lane Bridge would also introduce a new visual feature.

*Duration:*

During establishment of mitigation (approx. 15 years), and then the lifetime of the Scheme.

*Mitigation:*

In addition to mitigation in paragraph 4.3.3 the following is proposed:  
 New woodland belt planting along the proposed cutting slopes, and off-site woodland block planting within the wider parkland landscape to help off-set the loss of parkland tree groups. Furthermore, off-site woodland block planting would be provided within the wider parkland landscape to replace the lost groups of parkland trees.

## **9 NOISE AND VIBRATION**

### **9.1 Introduction**

- 9.1.1 This Section provides the noise and vibration baseline data, identifies additional data to be obtained and indicates potential effects (during construction and operation) as well as mitigation measures that may be required in order to avoid, reduce and, if possible, remedy adverse effects.
- 9.1.2 This Section should be read together with Figure 9.1 Noise Important Areas and Monitoring Locations Within Study Area, Figure 9.2: Short Term Noise Change Contours and Figure 9.3: Long Term Noise Change Contours at Appendix A.
- 9.1.3 Information presented within this Section is based upon currently available data relating to both the construction and operational phases of the Scheme and design work undertaken to-date.

### **9.2 Existing Environmental Conditions**

- 9.2.1 The dominant source of noise in the area the Scheme is located is traffic noise, primarily generated by vehicles traveling along the principle routes in the vicinity including the A585 and A586.
- 9.2.2 There are existing residential receptors located towards the western end of the Scheme in Skippool and along the existing A585. There are also residential receptors in and around Little Singleton along with a handful of isolated dwellings in the vicinity of the Scheme towards the Windy Harbour junction – refer to Figure 9.1 at Appendix A.
- 9.2.3 The DMRB classifies ‘other sensitive receptors’ (non-residential receptors) as hospitals, schools, community facilities, designated areas (e.g. AONB, National Park, SAC, SPA, SSSI, scheduled monument, places of worship and PRow).
- 9.2.4 Across the noise and vibration study area (study area presented on Figure 9.1 at Appendix A) for the Scheme the following ‘other sensitive receptors’ have been identified:
- Hodgeson Academy
  - Poulton St Chads School
  - Primrose Bank Rest Home
  - Alexandra Nursing Home
  - Breck Primary School
  - Brookfield School
  - Poulton New Cemetery
- 9.2.5 The location of all ‘other sensitive receptors’ within the noise and vibration study area are presented in Figure 9.1 at Appendix A.
- 9.2.6 There are ten Noise Important Areas (NIAs) within the noise and vibration study area.

NIAs are locations in England where the top 1% of the population that are affected by the highest noise levels are located according to the results of the strategic noise mapping undertaken by Defra under the terms of the Environmental Noise (England) Regulations 2006. The ten NIAs within the noise and vibration study area are:

- Defra NIA ref: 67, located along the A588
- Defra NIA ref: 6820, located along the A585
- Defra NIA ref: 63, located along the A585
- Defra NIA ref: 64, located along the A585
- Defra NIA ref: 65, located along the A585
- Defra NIA ref: 68, located along the A586
- Defra NIA ref: 67, located along the A588
- Defra NIA ref: 69, located along the A588
- Defra NIA ref: 6819, located along the A585
- Defra NIA ref: 10542, located along the A585

Locations of the NIAs above are presented on Figure 9.1 at Appendix A.

### **Noise Monitoring**

9.2.7 In order to gain an understanding of the existing noise climate within the local area, attended noise surveys have been carried out at eight monitoring locations positioned along the Scheme corridor. Surveys were undertaken on 29 and 30 November 2017 and were carried out in accordance with relevant guidance and British Standards. Attended monitoring locations are presented on Figure 9.1 at Appendix A and are detailed as follows:

- NML 1: Sound level meter set up at a height of 1.5m on the side of Pool Foot Lane in Little Singleton, approximately 10m from the nearest property and 1m from the kerb edge of the existing Mains Lane. Road noise was the dominant source of noise
- NML 2: Sound level meter set up at a height of 1.5m on the kerbside of Garstang Road, approximately 80m from the nearest property. Road noise was the dominant source of noise
- NML 3: Sound level meter set up at a height of 1.5m on the kerbside of Lodge Lane(B5060), approximately 30m from the nearest property. Road Noise was the dominant noise source
- NML 4: Sound level meter set up at a height of 1.5m on the kerbside of Mains Lane approximately 60m from the Shard road junction, approximately 32m from the nearest property. Road Noise was the dominant noise source
- NML 5: Sound level meter set up at a height of 1.5m on the kerbside of Breck Road, approximately 20m from the nearest property. Road noise was the dominant source of noise

- NML 6: Sound level meter set up at a height of 1.5m on the kerbside of Mains Lane, approximately 50m from the nearest property. Road noise was the dominant source of noise
- NML 7: Sound level meter set up at a height of 1.5m on the kerbside of Breck Road, approximately 17m from the nearest property. Road noise was the dominant source of noise
- NML 8: Sound level meter set up at a height of 1.5m on the kerbside of Garstang New Road, approximately 195m from the nearest property. Road noise was the dominant source of noise

9.2.8 During the attended monitoring the following meteorological conditions were noted, which are acceptable for the measurement of environmental noise:

- Winds speeds remained below 5m/s in a south westerly direction
- Cloud cover was estimated to be approximately 10%
- Temperature remained between 2°C and 6°C
- Ground conditions were noted to be dry with no precipitation falling during the attended monitoring

9.2.9 A summary of the attended noise monitoring is presented in Table 9-1.

**Table 9-1: Noise and Vibration - Summary Attended Noise Monitoring Baseline Data**

Noise Monitoring Location (Refer to Figure 9.1 at Appendix A)	dB LA10, 3 hour	dB LAeq, 3 hour	dB LA90, 3 hour	Calculated dB LA10, 18 hour *
NML 1	71.4	69.2	62.6	70.4
NML 2	80.8	76.3	56.0	79.8
NML 3	76.3	71.2	55.8	75.3
NML 4	73.3	70.2	60.8	72.3
NML 5	69.6	67.0	62.4	68.6
NML 6	78.3	75.2	66.0	77.3
NML 7	80.6	76.9	65.5	79.6
NML 8	85.1	81.7	74.1	84.1
* dB LA10, 18 hour value estimated in accordance with CRTN by subtracting 1dB from the dB LA10 3 hour noise measurement				

9.2.10 At all monitoring locations subjective field notes conclude that road traffic noise forms a significant part of the existing noise climate. The measured levels are typical of what would be expected at road side positions where monitoring has been undertaken.



**9.3 Other baseline information to be obtained / surveys to be undertaken and limitations**

- 9.3.1 Additional baseline/ambient noise surveys would be undertaken to inform the Noise and Vibration Chapter in the ES, covering both the weekday and weekend periods to gain an understanding of the local diurnal noise variations, and night time noise levels at sensitive receptors within the noise and vibration study area.
- 9.3.2 The specifics of the survey locations and durations have been agreed with both Fylde Borough Council and Wyre Borough Council.
- 9.3.3 In addition to the monitored baseline data, as part of the ES assessment the prediction of existing and future baseline road traffic noise contribution to the area in the absence of the Scheme would be undertaken. This would be predicted through detailed noise modelling in accordance with appropriate guidance and British Standards.

**9.4 Potential Effects and Mitigation Measures**

**Aspects Scoped into and out of the Assessment**

- 9.4.1 The following has been scoped in to the EIA:
  - Noise effects during construction
  - Short-term and long-term noise effects during operation
- 9.4.2 The potential effects of the Scheme during construction and operation and the measures proposed to manage them are outlined below.

**Construction**

**Table 9-2: Noise and Vibration - Effects and mitigation on Sensitive Receptors – Construction**

Receptor – Sensitive Receptors with 300m of Scheme
<p><i>Nature of Effect:</i></p> <p>Construction activities would be managed to minimise noise disturbance, however, there would be temporary noise effects during this period. It is anticipated that construction noise effects could occur due to:</p> <ul style="list-style-type: none"> <li>• Noise from the operation of construction plant</li> <li>• Noise from the construction of the B5260 Lodge Lane underpass</li> <li>• Noise from Heavy Goods Vehicles (HGV) movements to and from the site, for example site deliveries</li> </ul> <p>It is anticipated that construction vibration effects could occur due to piling activities.</p> <p>It is not anticipated that any significant construction works would be required during night-time, apart from discrete packages of work to tie in the new Scheme to the existing road network.</p>

**Receptor – Sensitive Receptors with 300m of Scheme**

*Duration:*  
 Throughout the two-year construction period.  
 Although through the entire construction period levels of construction noise and vibration would vary greatly as a result of the transient nature of the works. Impacts at any one specific receptor are likely to be evident for only a limited period of time as the works progress.

*Mitigation:*  
 Best practise measures to minimise noise and vibration impacts from the construction phase would be incorporated into the Scheme’s CEMP, which would ensure commitments / methods are adhered to. The CEMP would also include contact details for a site representative in the event that disturbance due to noise or vibration from the construction works occurs and ensure that any complaints are dealt with pro-actively and that subsequent resolutions are communicated to the complainant.

**Operation**

- 9.4.3 Operational noise is defined as the noise generated by vehicles using a road. In order to assess operational noise impacts a comparison has been made between the noise climate with the Scheme and without the Scheme, in both the opening (2022) and future assessment (2037) years. These comparisons have been undertaken using proprietary noise modelling software in accordance with appropriate methodology and based on modelled traffic data.
- 9.4.4 The information presented within Tables 9-3 to 9-10 below is based on the road traffic noise change contour plots presented in Figures 9.2 and 9.3 at Appendix A. The change contours are presented at 4.0m above ground level as required by DMRB for situations where dwellings have a first floor.
- 9.4.5 To aid in the discussion of the potential operational impacts of the Scheme the study area has been separated into sections (refer to Figures 9.2 and 9.3 at Appendix A) where sensitive receptors, comprising both residential and ‘Other Sensitive Receptors’ are located. These sections are described in the tables below.:

<b>Table 9-3</b>	Sensitive Receptors within the study area along Skippool Road north of existing A585, and Breck Road south of the A585 through the eastern extent of Poulton-le-Fylde
<b>Table 9-4</b>	Sensitive Receptors along the existing A585 between the existing Skippool roundabout and Old Mains Lane
<b>Table 9-5</b>	Sensitive Receptors Located Along Mains Lane
<b>Table 9-6</b>	Sensitive Receptors located within Little Singleton and River Wyre Caravan Park
<b>Table 9-7</b>	Sensitive Receptors located along Lodge Lane, South of Little Singleton

<b>Table 9-8</b>	Sensitive Receptors located to the east of Little Singleton along Garstang New Road including the Windy Harbour Holiday Park
<b>Table 9-9</b>	Sensitive Receptors located in the vicinity of Garstang Road East
<b>Table 9-10</b>	Sensitive Receptors' Located in the vicinity of Little Poulton Lane including the Moorfield Park Housing Development

9.4.6 Within the tables that follow road traffic noise impacts have been presented based upon perceptibility, and the beneficial or adverse nature of the potential change in noise level. DMRB provides classification for the magnitude of change in road traffic noise. A change in road traffic noise of 1dB(A) in the short-term is the smallest that is considered perceptible. In the long-term a 3dB(A) change is the smallest that is considered to be perceptible.

**Table 9-3: Noise and Vibration - Sensitive receptors within the study area along Skippool Road north of the existing A585, and Breck Road south of the A585 through the Eastern Extent of Poulton le Fylde – Operation**

<b>Receptor – Sensitive receptors within the study area along Skippool Road north of the existing A585, and Breck Road south of the A585 through the Eastern Extent of Poulton-le-Fylde</b>
<p><i>Nature of Effect:</i></p> <p>While there are no improvement works proposed along either of these roads or within the eastern extent of Poulton-le-Fylde, there is potential for indirect noise effects to occur as a result of the Scheme.</p> <p>With reference to area 1 on Figures 9.2 and 9.3 at Appendix A the following potential short-term and long-term impacts based upon the perceptibility criteria outlined in paragraph 9.4.6 are anticipated:</p> <ul style="list-style-type: none"> <li>● Short-term imperceptible changes are predicted to occur at sensitive receptors in the vicinity of Skippool Road, Breck Road and the eastern extent of Poulton-le-Fylde due to negligible changes in traffic</li> <li>● Long-term imperceptible changes are predicted to occur at sensitive receptors in the vicinity of Skippool Road, Breck Road and the eastern extent of Poulton-le-Fylde due to negligible changes in traffic</li> </ul>
<p><i>Duration:</i></p> <p>Short-term impact at the immediate point of opening to traffic and long-term 15 years after opening.</p>
<p><i>Mitigation:</i></p> <p>The results of the initial noise assessment indicate that no mitigation would be required for these areas due to the predicted noise changes being imperceptible in the both the short-term and long-term.</p>

**Table 9-4: Noise and Vibration - Sensitive receptors along the existing A585 between the existing Skippool roundabout and Old Mains Lane – Operation**

Receptor – Sensitive receptors along the existing A585 between the existing Skippool roundabout and Old Mains Lane
<p><i>Nature of Effect:</i></p> <p>Road improvement works along this section of the existing A585 would be implemented through the Scheme. These include the conversion of Skippool Roundabout to a signalised junction, alignment changes to the existing A585 and the tie in of the western end of the new bypass. With reference to area 2 on Figures 9.2 and 9.3 at Appendix A the following potential short-term and long-term impacts based upon the perceptibility criteria outlined in paragraph 9.4.6 are anticipated:</p> <ul style="list-style-type: none"> <li>● Short-term perceptible beneficial changes in road traffic noise are predicted to occur at Sensitive receptors in the vicinity of Skippool Roundabout and the A585 through this section</li> <li>● Long-term imperceptible changes in road traffic noise are predicted to occur at Sensitive receptors in the vicinity of Skippool Roundabout and the A585 through this section</li> </ul> <p>The exception to the above is that there will be perceptible increases in road traffic noise in both the long-term and short-term at receptors surrounding the new junction where the Scheme joins the existing A585. Some of the properties identified include:</p> <ul style="list-style-type: none"> <li>● Dwellings located towards the south of Old Mains Lane</li> <li>● The Beeches</li> <li>● Meadow View Barn</li> <li>● Old Barn</li> <li>● Manor House Stables</li> <li>● The Farmhouse</li> <li>● Old Cottage</li> <li>● Normandy</li> </ul>
<p><i>Duration:</i></p> <p>Short-term impact at the immediate point of opening to traffic and long-term, 15 years after opening.</p>
<p><i>Mitigation:</i></p> <p>Throughout the majority of this section low noise surfacing is likely to control adverse road traffic noise impacts.</p> <p>Where the new bypass ties into the existing A585 there is a potential for larger adverse impacts. As such additional mitigation would be explored, possible measures could include:</p> <ul style="list-style-type: none"> <li>● Environmental barriers in the form of earth mounding or acoustic fencing of various types, or a combination of the two</li> <li>● Mitigating the impact on buildings likely to be affected through noise</li> </ul>

**Receptor – Sensitive receptors along the existing A585 between the existing Skippool roundabout and Old Mains Lane**

insulation of the building envelope

**Table 9-5: Noise and Vibration - Dwellings and Other Sensitive Receptors Located Along Mains Lane – Operation**

**Receptor – Sensitive receptors Located Along Mains Lane**

*Nature of Effect:*

While there are no improvement works proposed along the A585 Mains Lane itself, there is potential for indirect effects to occur as a result of the Scheme. There is also the potential for direct noise impacts at receptors located on the southern side of Mains Lane which back on to the new bypass. With reference to area 3 on Figures 9.2 and 9.3 at Appendix A the following potential short-term and long-term impacts based upon the perceptibility criteria outlined in paragraph 9.4.6 are anticipated:

- Short-term perceptible beneficial changes in road traffic noise are predicted to occur at sensitive Receptors located along the A585 Mains Lane
- Long-term perceptible beneficial changes in road traffic noise are predicted to occur at sensitive Receptors located along the A585 Mains Lane

The exception to the bullet points above are a limited number of dwellings located on the south of the A585 Mains Lane, which have an open aspect onto the new bypass route. As a result, southern facing façades of these receptors have the potential to exhibit the following impacts:

- Short-term perceptible adverse changes in road traffic noise, primarily as a result of the new Scheme alignment
- Long-term adverse changes in road traffic noise ,primarily as a result of the new Scheme alignment

*Duration:*

Short-term impact at the immediate point of opening to traffic and long-term 15 years after opening.

*Mitigation:*

Where appropriate, additional mitigation measures would be explored and could include environmental barriers. Barriers could be looked at along the northern side of the Scheme alignment through this section to reduce potential increases in road traffic noise at receptors located on the southern side of the A585 Mains Lane.

Environmental barriers can be in the form of earth mounding or acoustic fencing of various types, or a combination of the two.

**Table 9-6: Noise and Vibration - Sensitive receptors Located within Little Singleton and River Wyre Caravan Park – Operation**

Receptor – Sensitive receptors Located within Little Singleton and River Wyre Caravan Park
<p><i>Nature of Effect:</i></p> <p>Road improvement works along this section of the existing A585 would be implemented through the Scheme. With reference to area 4 on Figures 9.2 and 9.3 at Appendix A the following potential short-term and long-term impacts based upon the perceptibility criteria outlined in paragraph 9.4.6 are anticipated:</p> <ul style="list-style-type: none"> <li>• Short-term perceptible beneficial changes in road traffic noise are predicted to occur at sensitive receptors located within Little Singleton and River Wyre Caravan Park . Benefits are a result of reductions in traffic flows</li> <li>• Long-term perceptible beneficial changes in road traffic noise are predicted to occur at sensitive receptors located within Little Singleton and River Wyre Caravan Park. Benefits are a result of reductions in traffic flows</li> </ul>
<p><i>Duration:</i></p> <p>Short-term impact at the immediate point of opening to traffic and long-term 15 years after opening.</p>
<p><i>Mitigation:</i></p> <p>The results of the initial noise assessment indicate that no further mitigation would be required for this area due to the predicted beneficial noise reductions as a result of the Scheme.</p>

**Table 9-7: Noise and Vibration - Sensitive Receptors’ Located along Lodge Lane, South of Little Singleton – Operation**

Receptor – Sensitive Receptors Located along Lodge Lane, South of Little Singleton
<p><i>Nature of Effect:</i></p> <p>Improvement works are proposed along the B5260 Lodge Lane as a result of the new alignment. There is potential for direct adverse noise effects to occur as a result of the Scheme due to the proximity of the new bypass to receptors. With reference to area 5 on Figures 9.2 and 9.3 at Appendix A the following potential short-term and long-term impacts based upon the perceptibility criteria outlined in paragraph 9.4.6 are anticipated:</p> <ul style="list-style-type: none"> <li>• Short-term perceptible adverse changes in road traffic noise are predicted to occur at sensitive receptors located in the vicinity of Lodge Lane. This is a direct result of proximity of the new road alignment</li> <li>• Long-term perceptible adverse changes in road traffic noise are predicted to occur at sensitive receptors located in the vicinity of Lodge Lane. This is a direct result of proximity of the new road alignment</li> </ul>



**Receptor – Sensitive Receptors Located along Lodge Lane, South of Little Singleton**

*Duration:*

Short-term impact at the immediate point of opening to traffic and long-term 15 years after opening.

*Mitigation:*

Where appropriate additional mitigation measures would be investigated and may include environmental barriers.

**Table 9-8: Noise and Vibration - Sensitive receptors’ located to the east of Little Singleton along Garstang New Road, including the Windy Harbour Holiday Park – Operation**

**Receptor – Sensitive receptors located to the east of Little Singleton along Garstang New Road, including the Windy Harbour Holiday Park**

*Nature of Effect:*

Road improvement works along this section of the existing A585 would be implemented through the. With reference to area 6 on Figures 9.2 and 9.3 at Appendix A the following potential short-term and long-term impacts based upon the perceptibility criteria outlined in paragraph 9.4.6 are anticipated:

- Short-term perceptible adverse changes in road traffic noise level are predicted to occur at sensitive receptors located in the vicinity of Garstang New Road through this area, due to an increase in operational traffic speed
- Long-term imperceptible changes in road traffic noise are predicted to occur at sensitive receptors located in the vicinity of Garstang New Road through this area

*Duration:*

Short-term impacts evident at the immediate point of opening to traffic. No long-term road traffic noise impacts are predicted to occur.

*Mitigation:*

Additional mitigation measures along this section would not be required.

**Table 9-9: Noise and Vibration - Sensitive receptors Located in the vicinity of Garstang Road East – Operation**

**Receptor – Sensitive receptors Located in the vicinity of Garstang Road East**

*Nature of Effect:*

Although there are no alterations to the A586 Garstang Road East around Poulton-le-Fylde predicted increases in traffic flow as a result of the Scheme have the capability to cause perceptible increases in this area.

With reference to area 7 on Figures 9.2 and 9.3 at Appendix A the following potential short-term and long-term impacts based upon the perceptibility criteria outlined in paragraph 9.4.6 are anticipated:

**Receptor – Sensitive receptors Located in the vicinity of Garstang Road East**

- Short-term perceptible adverse changes in road traffic noise level are predicted to occur at sensitive receptors located in the vicinity of Garstang Road East due to an increase in operational traffic flow and consequential changes in speed
- Long-term imperceptible changes in road traffic noise are predicted to occur at sensitive receptors located in the vicinity of Garstang Road East, due to an increase in operational traffic

*Duration:*

Short-term impacts evident at the immediate point of opening to traffic. No long-term road traffic noise impacts are predicted to occur.

*Mitigation:*

Additional mitigation measures through this section would not be required.

**Table 9-10: Noise and Vibration - Sensitive receptors Located in the vicinity of Little Poulton Lane including the Moorfield Park Housing Development – Operation**

Receptor – Sensitive receptors Located in the vicinity of Little Poulton Lane including the Moorfield Park Housing Development
<p><i>Nature of Effect:</i></p> <p>These receptors have the potential to be adversely affected by road traffic noise generated by the new bypass. With reference to area 8 on Figures 9.2 and 9.3 at Appendix A the following potential short-term and long-term impacts based upon the perceptibility criteria outlined in paragraph 9.4.7 are anticipated:</p> <ul style="list-style-type: none"> <li>• Short-term perceptible adverse changes in road traffic noise are predicted to occur at sensitive receptors located to the south of the new bypass in the vicinity of Little Poulton Lane and the Moorfield Park Housing Development. This is a direct result of geographic proximity of the new road alignment to these receptors</li> <li>• Long-term perceptible adverse changes in road traffic noise are predicted to occur at sensitive receptors located to the south of the new bypass in the vicinity of Little Poulton Lane and the Moorfield Park Housing Development. This is a direct result of geographic proximity of the new road alignment to these receptors</li> </ul>
<p><i>Duration:</i></p> <p>Short term impacts evident at the immediate point of opening to traffic and long-term impacts over 15 years after opening.</p>
<p><i>Mitigation:</i></p> <p>Where appropriate additional mitigation measures would be explored and could include environmental barriers.</p> <p>Environmental barriers could be in the form of earth mounding or acoustic fencing of various types, or a combination of the two.</p>

## 10 PEOPLE AND COMMUNITIES

### 10.1 Introduction

10.1.1 This Section provides the people and communities baseline data, identifies additional data to be obtained and indicates potential effects (during construction and operation) as well as mitigation measures that may be required to order to avoid, reduce and, if possible, remedy significant adverse effects.

10.1.2 This Section should be read together with Figures 10.1 Public Rights of Way and Key Community Facilities, 10.2 Soilscape, 10.3 Provisional-Agricultural Land Classification Mapping, 10.4 Post 1988- Agricultural Land Classification Mapping and 10.5 Environmental-Stewardship Agreements and Forestry Woodland at Appendix A.

### 10.2 Existing Environmental Conditions

- 10.2.1 Study areas have been chosen based on a combination of the requirements of the DMRB. Study areas and baseline data collated for the people and communities section is described below and presented on Figures 10.1 and 10.2 at Appendix A.

### **Land Use**

- 10.2.2 Land use includes private property and land (both commercial and residential), used by the community, development land and agricultural land. Existing information for each of these categories is provided below.

### **Commercial and Private Assets**

- 10.2.3 Properties along Old Mains Lane that are within the draft order limits for the Scheme include West Wynds, Old Mains Lane (which is in the ownership of Lancashire County Council) and the Beeches, 205 Mains Lane. In the immediate vicinity of the Scheme are other residential properties, including those fronting the A585 itself; properties found immediately to the west of the northern section of the Scheme along Riversway and Royston Road; and a further property – Singleton Manor – found towards the east of the Scheme, immediately to the north of Skippool Park.
- 10.2.4 Commercial assets identified within the vicinity of the Scheme include the River Wyre public house, Thornton Lodge public house and restaurant, commercial properties along Old Mains Lane (kennels and cattery) and Skippool Service Station.
- 10.2.5 Further afield, commercial properties which are located in the vicinity of the A585, include Mains Hall Manor (self-catering holiday accommodation, wedding and banqueting venue), Singleton Lodge (a country house hotel) and various other small businesses (for example aquarium and pond suppliers on Mains Lane, and a laboratory providing veterinary services).
- 10.2.6 The Poulton Industrial Estate is located to the south of the A586 Garstang Road East on the outskirts of Poulton-le-Fylde, to the south west of the Scheme. The industrial estate comprises a number of small and medium business enterprises, comprising a mix of industry sectors.

### **Community Facilities**

- 10.2.7 The settlements of Thornton, Poulton-le-Fylde and Singleton include a variety of social and community infrastructure, including education and healthcare facilities, community centres and places of worship. Community facilities identified within a 500m corridor either side of the Scheme include Brookfield School, Breck Primary School, Poulton New Cemetery and Thornton Cleveleys Cricket ground. Towards the north of the Scheme, public moorings for boats on Skippool Creek are also located within the study area.
- 10.2.8 The Scheme passes 250m to the north of Singleton Park, which has been opened up to the local community along with adjoining farmland by the Richard Dumbreck Singleton Trust, so that residents and visitors can access and enjoy the natural environment.
- 10.2.9 The Trust has built wheelchair friendly permissive footpaths with accessible kissing gates, linking these to the existing PRoW network and plan to build more paths linking up with the B2560 (Lodge Lane). In adjoining farmland, the Trust has

developed permissive footpaths linking up and providing some 5km of walks. These footpaths are all found within Singleton Park and are not affected by the Scheme.

### **Development Land**

- 10.2.10 A residential development of approximately 500 homes was approved by Wyre Borough Council in February 2017 (Application Number: 15/00298/LMAJ), for a development on the outskirts of Poulton-le-Fylde. This site, which comprises some 31 hectares, is located to the north of Poulton Industrial Estate, approximately 100m south-west of the Scheme. Two new access points are proposed off Garstang Road East, together with new footpath access. Construction on the site is due to commence in Spring 2018.

### **Agricultural Land**

- 10.2.11 Agricultural businesses and other landholdings within the study area have been identified through Land Registry information. Landholdings that may potentially be affected by land-take are as follows:

- Manor House Farm, Mains Lane – land intersected by the Scheme
- Ryecroft Farm, Mains Lane – land intersected by the Scheme
- Cowburns Farm, both sides of Garstang Road East – land intersected by the Scheme
- Lodge Farm, land west of Lodge Lane – land intersected by the Scheme and required temporarily for earthworks borrowpits
- Singleton Park (north) south of Garstang New Road – land intersected by the Scheme
- Asha Blues Farm south of Garstang New Road – land intersected by the Scheme
- Singleton Grange Farm, Grange Road, Singleton –northern fields affected by the Scheme
- Pointer House, on the south-west of Windy Harbour Junction – northern fields affected by the Scheme
- Shard Bridge Farm, north of Mains Lane, western field affected by the Scheme

- 10.2.12 All the farms identified currently use the local road network, comprising Garstang Road East; Garstang New Road, Mains Lane, Lodge Lane and Shard Road.

- 10.2.13 Baseline agriculture and soils data has been collated for the land within the draft order limits. This includes information on the soils, Agricultural Land Classification (ALC) and Environmental Stewardship and Forestry/Woodland Schemes.

### **Soils**

- 10.2.14 A number of different soil types are mapped within the application site (Figure 11.2 at Appendix A). In the western area the soils associated with the Main Dyke floodplain are mapped as loamy and clayey soils of coastal flats with naturally high groundwater.

10.2.15 On slightly elevated ground running north-south around Little Singleton, the soils are mapped as slightly acid loamy and clayey soils with impeded drainage.

10.2.16 To the east the soils are mapped as slowly permeable, seasonally wet, slightly acid but base-rich loamy and clayey soils, with soils more typical of the coastal flat soils found within the lower lying areas.

### **Agricultural Land Classification (ALC)**

10.2.17 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 quality alone and the main physical factors which are taken into account are climate, relief and soil.

10.2.18 The land within the application site is predominantly mapped as Grade 2, with Grade 3 land on the eastern edge (Figure 10.3 at Appendix A). It should be noted that this is provisional mapping. Natural England, in Technical Information Note 049 (Natural England, 2012) state that “*These maps are not sufficiently accurate for use in assessment of individual fields or development sites, and should not be used other than as general guidance.*” In addition, their production preceded the subdivision of Grade 3 (into sub-grades 3a and 3b). This is an important distinction as Grade 3a land is considered to be best and most versatile land (along with Grades 1 and 2).

10.2.19 No detailed mapping (Post-1988) mapping exists for the Scheme (Figure 11.3 at Appendix A). Land immediately to the south of Main Dyke, as far as Garstang Road East, has been mapped in detail as predominantly Grade 3b with a small area of Grade 3a land.

### **Environmental Stewardship and Forestry/Woodland Schemes**

10.2.20 Whilst land in the vicinity of the Scheme is in Environmental Stewardship Schemes, none of the land within the application site is covered (Figure 10.4 at Appendix A). Carr Wood and the land around Singleton School are included within Woodland Grant schemes. No further information on these is available at this stage.

### **Journey Length, Patterns and Amenity**

10.2.21 There are several PRoW and paths which are located in the vicinity of the Scheme which have been identified using Lancashire County Council’s definitive mapping tool. All PRoWs are detailed below and shown on Figure 10.1 at Appendix A:

- Footpath 5-8-FP 11 becomes 2-2-FP 1 – runs in a north south direction for 900 metres along the west bank of Main Dyke down to Little Poulton Lane
- Footpath 5-11-FP 2 – runs in a north south direction from Pool Foot Lane across Garstang New Road through Singleton Grange Farm
- Footpath 5-11-FP 6 – runs between Skippool on the A585 to Little Singleton along the south bank of the Wyre Estuary and includes part of the Wyre Way recreational route



- Footpath 2-2-FP 2 – runs in a north-west / south-east direction from Little Poulton Lane towards Garstang Road East
- Footpath 2-2-FP 3 – runs in an east west direction from Footpath 2-2-FP 2 to the west bank of Main Dyke (but has no crossing point of Main Dyke)
- The Wyre Way recreational route is located to the north of the application site and runs along Wyre Road, crosses Horsebridge Dyke at Skippool Junction then runs north-eastwards to join footpath 5-11-FP6 north of Old Mains Lane continuing eastwards to Shard Road at the south end of The Shard Bridge.

### **Community Severance**

- 10.2.22 Community facilities and services within 500m of the Scheme have been identified and include Brookfield School and the Breck Primary School, Poulton New Cemetery and Thornton Cleveleys Cricket ground.

### **Vehicle Travelers – View from the Road**

The local landscape can be characterised as LCA 1: Wyre Estuary Open Farmed

- 10.2.23 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 in Section 8 of this PEIR.

### **Vehicle Travelers – Driver Stress**

- 10.2.24 The A585 is a single carriageway trunk road which provides the only viable access from the motorway network into Fleetwood and its urban areas. The route is therefore the main road in and out of Fleetwood and surrounding areas and is heavily congested between Windy Harbour and Skippool where drivers frequently experience significant delays, particularly during morning and evening rush hours.
- 10.2.25 The congestion is particularly severe at the A585/A586 signalised junction (Little Singleton), the A585/A588 signalised junction (Shard Road) and the A585/A588 Skippool Roundabout. The interaction of all three junctions further exacerbates congestion problems for travellers.

### **Tourism**

- 10.2.26 There are three caravan parks within 500m of the application site: The River Wyre Caravan Park; Pool Brow Caravan Park and Windy Harbour Caravan Park. In addition, there are two small residential caravan parks in Little Singleton and Skippool. The construction of the Scheme could therefore impact upon these assets (and therefore tourism revenue) in the local area. As such, the assessment would consider potential impacts on tourism in the local area.

## **10.3 Other baseline information to be obtained / surveys to be undertaken and limitations**

- 10.3.1 Other baseline information to be obtained primarily relates to traffic data and Non-Motorised User counts. Results from the traffic model on peak traffic flow and speed would be used to inform the assessment of community severance and driver stress.
- 10.3.2 Surveys to ascertain usage of PRow would be undertaken.

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

10.3.4 In addition, land owner / land manager interviews would be undertaken to understand the nature of the farm / forestry businesses such that an assessment of the impacts on farm viability can be undertaken.

## 10.4 Potential Effects and Mitigation Measures

### Aspects Scoped into and out of the Assessment

10.4.1 The following aspects have been scoped in to the EIA on the basis that potentially significant effects cannot be ruled out at this stage.

10.4.2 The construction effects of the Scheme would be considered in relation to:

- Land use
- (Loss or severance of) agricultural land and farm viability
- Change to journey length and pattern
- Tourism – specifically caravan parks within 500m

10.4.3 The operational effects of the Scheme would be considered in relation to:

- Journey length and pattern
- Journey amenity
- New severance
- Relief from existing severance
- Views from the road
- Driver stress
- Tourism – specifically caravan parks within 500m

10.4.4 All other people and communities effects have been scoped out of further assessment as it has been concluded that following standard mitigation measures significant effects were not likely.

10.4.5 The potential effects of the Scheme during construction and operation and the measures proposed to manage them are outlined below.

### Construction

**Table 10-1: People and Communities - Effects and mitigation on Commercial and Private Assets – Construction**

Receptor - Commercial and Private Assets
<i>Nature of Effect:</i>

<b>Receptor - Commercial and Private Assets</b>
One property would be subject to demolition as part of the works, a residential property called West Wynds which is tenanted but in the ownership of Lancashire County Council.
<i>Duration:</i> The lifetime of the Scheme.
<i>Mitigation:</i> Additional mitigation to that outlined in paragraph 4.3.3 includes adhering to methods / procedures for assessing appropriate levels of compensation (in accordance with the National Compensation Code). Ongoing consultation would also continue as necessary with relevant landowners, occupiers and agents.

**Table 10-2: People and Communities - Effects and mitigation on Development Land – Construction**

<b>Receptor – Development Land</b>
<i>Nature of Effect:</i> There would be no direct effect on development land as a result of the Scheme. However, there is potential for negative indirect effects on nearby development sites arising from temporary roadworks and construction activities.
<i>Duration:</i> During the two-year construction period.
<i>Mitigation:</i> Additional mitigation to that outlined in paragraph 4.3.3 includes the implementation of a Transport Management Plan (TMP) and CEMP. Both of which would help reduce potential impacts of construction traffic and activities.

**Table 10-3: People and Communities – Agricultural Soils– Construction**

<b>Receptor – Agricultural Soils</b>
<i>Nature of Effect:</i> Loss of best and most versatile agricultural land.
<i>Duration:</i> During the two-year construction period and the lifetime of the Scheme.
<i>Mitigation:</i> There is no direct mitigation for the loss or severance of agricultural land. The implementation of best practice in relation to soil handling, restoration and re-use (in accordance with the Defra Construction Code (2009)) would be implemented.

**Table 10-4: People and Communities – Agricultural Businesses –**

**Construction**

Receptor – Agricultural Businesses
<p><i>Nature of Effect:</i>                      Loss of land, disruption to business operations, viability impacted.</p>
<p><i>Duration:</i>                      During the two-year construction period and the lifetime of the Scheme.</p>
<p><i>Mitigation:</i>                      Potential impacts on farm viability would be discussed with land owners / land managers with the potential for compensation agreements to be reached. A Considerate Constructors Scheme would be in place to minimise disruption during the construction phase and a continued dialogue would be maintained with landowners.</p>

**Table 10-5: People and Communities - Effects and mitigation on Local Residents – Construction**

Receptor – Local Residents
<p><i>Nature of Effect:</i>                      There may be a negative impact on people who live and work in the immediate area of the Scheme as a result of changes to amenity arising from construction activities – so for example a combination of dust arising from construction activities, changes in visual amenity and changes to noise levels. These effects are discussed individually in Sections 5, 8 and 9 of this PEIR.</p>
<p><i>Duration:</i>                      During the two-year construction period.</p>
<p><i>Mitigation:</i>                      Additional mitigation to that outlined in paragraph 4.3.3 includes the implementation of a TMP and CEMP. Both of which would help reduce potential impacts of construction traffic and activities.                      Further information on specific mitigation measures as they relate to noise, air quality and visual amenity can be found in Sections 5, 8 and 9 of this PEIR respectively.</p>

**Table 10-6: People and Communities - Effects and mitigation on Community Severance – Construction**

Receptor – Community Severance
<p><i>Nature of Effect:</i>                      There may be a negative effect on community severance as a result of construction activities. This may be actual or perceived; this is an area in which further work would be undertaken as the Scheme is developed and relevant data is available.</p>
<p><i>Duration:</i></p>

<b>Receptor – Community Severance</b>
During the two-year construction period.
<p><i>Mitigation:</i></p> <p>Additional mitigation to that outlined in paragraph 4.3.3 includes the implementation of a TMP which would be implemented in order to minimise delays during construction.</p>

**Table 10-7: People and Communities - Effects and mitigation on Public Rights of Way – Construction**

<b>Receptor – Public Rights of Way</b>
<p><i>Nature of Effect:</i></p> <p>There would be a negative effect on certain PRow and paths in the vicinity of the Scheme as a result of construction activities. Footpaths 2-2-FP 2, 2-2-FP 3 and 5-11-FP 2 runs in close proximity to the Scheme and would be affected by the works, e.g. amenity. Effects may include PRow being temporarily closed for short periods of time, or the need for temporary diversions to be put in place.</p>
<p><i>Duration:</i></p> <p>During the two-year construction period.</p>
<p><i>Mitigation:</i></p> <p>Additional mitigation to that outlined in paragraph 4.3.3 includes developing measures to minimise disruption to users. This may include putting temporary diversions in place and ensuring that any closure periods are minimised.</p>

**Table 10-8: People and Communities - Effects and mitigation on Vehicle Travellers – Construction**

Receptor – Vehicle Travellers
<p><i>Nature of Effect:</i></p> <p>During construction, vehicle travellers may experience a negative effect in terms of views from the road, as a result of the presence of construction activities. In addition, vehicle travellers could experience delays, either as a result of reduced speed limits through roadworks, the presence of construction traffic, increased congestion throughout the area or as a result of drivers re-routing.</p>
<p><i>Duration:</i></p> <p>During the two-year construction period.</p>
<p><i>Mitigation:</i></p> <p>Additional mitigation to that outlined in paragraph 4.3.3 includes the implementation and adherence to a CEMP which would minimise negative environmental effects of construction activities, including visual impacts. In addition, a TMP may help to minimise delays during construction. Such measures could include temporary signage and stipulated construction routes which would reduce uncertainty and frustration.</p>

**Table 10-9: People and Communities - Effects and mitigation on Tourism – Construction**

Receptor – Tourism
<p><i>Nature of Effect:</i></p> <p>As outlined, there are three caravan parks within 500m of the application site. The construction of the Scheme could therefore impact upon these assets and potentially affect tourism revenue in the local area.</p>
<p><i>Duration:</i></p> <p>During the two-year construction period</p>
<p><i>Mitigation:</i></p> <p>Consultation would be undertaken with proprietors before and during works in order to minimise any negative effects and ensure that managers are fully aware of work programmes etc.</p>

**Operation**

**Table 10-10: People and Communities - Effects and mitigation on Commercial and Private Assets – Operation**

Receptor – Commercial and Private Assets
<p>Refer to Table 10-1. No additional effects during operation.</p>



**Table 10-11: People and Communities - Effects and mitigation on Public Rights of Way – Operation**

Receptor – Development Land
<p><i>Nature of Effect:</i>                      There would be both positive and negative effects on certain PRow and footpaths in the vicinity of the Scheme during operation. Positive effects may include the creation of new, accessible, footpath links across the road; negative links may include lengthier journey times as a result of diversion routes created.</p>
<p><i>Duration:</i>                      The lifetime of the Scheme - Permanent</p>
<p><i>Mitigation:</i>                      New footbridges and footpath diversions to be designed as being fully accessible for users.</p>

**Table 10-12: People and Communities - Effects and mitigation on Driver Stress – Operation**

Receptor – Vehicle Travellers (driver stress)
<p><i>Nature of Effect:</i>                      It is expected that during operation of the Scheme, there would be a positive effect on driver stress through reductions in congestion and improved accessibility between jobs and the labour market would be improved. Time and cost savings in terms of access to employment, goods and services would occur. Levels of stress are anticipated to be reduced because of improvements in the operation of the local road network. Reduced levels of traffic may be anticipated through Little Singleton and Skippool.</p>
<p><i>Duration:</i>                      The lifetime of the Scheme.</p>
<p><i>Mitigation:</i>                      N/A</p>

**Table 10-13: People and Communities - Effects and mitigation on Non-Motorised Users – Operation**

Receptor – Non-motorised users
<p><i>Nature of Effect:</i>                      Reduced levels of traffic may be anticipated through Little Singleton and Skippool, which should improve safety for Non-Motorised Users using the adjacent footways and cycleways. Changes in air quality and noise levels around junctions would equally improve amenity levels for Non-Motorised Users on these routes.</p>
<p><i>Duration:</i>                      The lifetime of the Scheme.</p>

*Mitigation:*  
 Design of the junctions would include specific measures for pedestrians and cyclists to assist them crossing roads

**Table 10-14: People and Communities - Effects and mitigation on Tourism – Operation**

Receptor – Tourism
<p><i>Nature of Effect:</i>                      There are three caravan parks within 500m of the application site. It is anticipated that the improved operation of the road network in the vicinity of these parks, would encourage more customers to use the caravan parks.</p>
<p><i>Duration:</i>                      The lifetime of the Scheme.</p>
<p><i>Mitigation:</i>                      N/A</p>

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## 11 ROAD DRAINAGE AND THE WATER ENVIRONMENT

### 11.1 Introduction

11.1.1 This Section details the approach to the assessment of the potential effects on road drainage and the water environment during both construction and operational phases. The approach is guided by Government's NPS NN. This states that development proposals should have regard to the requirements of the Water Framework Directive<sup>6</sup> (WFD). To achieve compliance with the WFD; development should be designed to ensure no deterioration in the quality of waterbodies.

11.1.2 This Section should be read together with Figures 11.1 Waterbodies and Flood Zones and 11.2 Aquifers at Appendix A.

### 11.2 Existing Environmental Conditions

11.2.1 Baseline water environment data has been collated for an area extending 500m from either side of the Scheme and is presented on Figure 11.1 at Appendix A. The study area was chosen based on a combination of the requirements of the DMRB and professional judgement.

11.2.2 Within the study area the following water features have been identified (refer to Figures 11.1 and 11.2 at Appendix A).

- River Wyre Estuary – an EA main river, tidally influenced and designated under the WFD. This waterbody has a chemical quality status of 'Fail' and its current ecological status is 'Moderate Potential', with a target of reaching Good by 2027. The EA flood map indicates that within the study area land at Skippool Junction and to the west of the Windy Harbour junction there is a low risk of tidal flooding
- Main Dyke – an EA main river that drains to the Wyre Estuary via Skippool Creek. It is a designated WFD waterbody and achieves an overall ecological status of 'Moderate Potential' and 'Good' status with regard to chemical water quality. Flood risk assessments undertaken to date show that the Scheme, crossing part of the Main Dyke floodplain on embankment, is not at risk of flooding from this source
- Horsebridge Dyke – an EA main river that drains to the Wyre Estuary via Skippool Creek. This waterbody is not monitored under the WFD, but its quality is assumed to be similar to that of the Main Dyke given its direct connection. Flood risk assessments undertaken to date show that the Scheme is not at risk of flooding from this source
- Pool Foot Creek (about 1km west of Windy Harbour junction) – an ordinary watercourse that drains to the Wyre Estuary, not monitored under the WFD. Assessment undertaken to date shows that the Scheme is not at risk of

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<sup>6</sup> In 2000, the European Union adopted the WFD which introduced a legislative approach to managing and protecting water, based not on national or political boundaries but on natural geographical and hydrological formations: river basins. It also requires coordination of different EU policies, and sets out a precise timetable for action, with 2015 as the target date for getting all European waters into good condition.

flooding from this source. After heavy rainfall lower lying fields in the study area can experience flooding

- Field drains and ponds – ordinary watercourses/waterbodies, not monitored under the WFD. Agricultural fields are reported to be prone to standing water during the winter months, due to waterlogged soil conditions
- West Lancashire Quaternary Sand and Gravel Aquifer – bedrock aquifer, classified as achieving a WFD status of Good for quantitative quality, meaning the level of groundwater in the aquifer meets the set criteria. Its chemical quality status is also Good. British Geological Survey mapping indicates that the study area has limited potential for flooding from groundwater sources
- Superficial aquifers – classified as Secondary undifferentiated, storing limited amounts of groundwater and not monitored under the WFD

11.2.3 There are no source protection zones<sup>7</sup> identified on the EA website within the study area.

11.2.4 There are no licenced abstractions (i.e. water being removed from a water source under a licence) within the study area supported by surface or groundwater resources. Seven consented discharges are made to surface waters within the study area.

### **11.3 Other baseline information to be obtained / surveys to be undertaken and limitations**

11.3.1 To inform the next stages of the assessment LCC, in their role as Lead Local Flood Authority (LLFA) would be consulted to agree surface water drainage. Results of the preliminary pollution risk assessments, completed using the Highways Agency Water Risk Assessment Tool (HAWRAT) would be presented to the LLFA, as well as the EA, to agree treatment proposals at road drainage outfalls.

11.3.2 Details of any unlicensed (private) water supplies would be requested from the Council.

11.3.3 Further work would be undertaken to complete our understanding of the tidal and fluvial flood risk baseline and to inform any flood risk management measures that may be necessary.

### **11.4 Potential Effects and Mitigation Measures**

#### **Aspects Scoped into and out of the Assessment**

11.4.1 The following aspects have been scoped in to the EIA on the basis that potentially significant effects cannot be ruled out at this stage.

11.4.2 The construction and operational effects of the Scheme would be considered in relation to:

- Flooding

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<sup>7</sup> Source Protection Zones (SPZs) are defined by the EA for groundwater sources such as wells, boreholes and springs that are used for public drinking water supply.

- Surface water drainage
- Groundwater levels/flows
- Groundwater quality
- Surface water quality

11.4.3 The potential effects of the Scheme during construction and operation and the measures proposed to manage them are outlined below.

**Construction**

**Table 11-1: Road Drainage and the Water Environment - Effects and Mitigation on Main Rivers and their floodplains - Construction**

Receptor – Wyre Estuary; Main Dyke, Horsebridge Dyke and their defended floodplains
<p><i>Nature of Effect:</i>  Negative effects on water quality due to receipt of construction site runoff and potential for reduced flow conveyance capacity (particularly on the Main Dyke) due to sedimentation.</p>
<p><i>Duration:</i>  During the two-year construction period</p>
<p><i>Mitigation:</i>  Additional to measures outlined in paragraph 4.3.3 a CEMP and Pollution Prevention Plan would be implemented during construction. These documents would include Scheme specific commitments and outline controls such as best practice to ensure construction site drainage is appropriate and pollution prevention measures are in line with CIRIA<sup>8</sup> guidance.</p>

**Table 11-2: Road Drainage and the Water Environment - Effects and Mitigation on Ordinary Watercourses - Construction**

Receptor – Pool Foot Creek and unnamed land drainage ditches
<p><i>Nature of Effect:</i>  Negative effects on water quality due to receipt of construction work site runoff and potential for reduced flow conveyance capacity due to sedimentation.</p>
<p><i>Duration:</i>  During the two-year construction period</p>
<p><i>Mitigation:</i>  Additional to measures outlined in paragraph 4.3.3 a CEMP would be implemented during construction. The CEMP would include Scheme</p>

<sup>8</sup> Construction Industry Research and Information Association for example, Construction Industry Research and Information Association (2015) Environmental good practice on site guide, 4th edition, (C741)

Receptor – Pool Foot Creek and unnamed land drainage ditches
specific commitments including best practice construction site drainage management and pollution prevention measures in line with CIRIA <sup>9</sup> guidance.

**Table 11-3: Road Drainage and the Water Environment - Effects and Mitigation on Groundwater Resources - Construction**

Receptor – Bedrock and superficial aquifers
<p><i>Nature of Effect:</i>                  Locally reduced groundwater levels and altered groundwater flow paths should dewatering be necessary, particularly along the section of the Scheme that is in cut. Negative effects on groundwater quality due to receipt of construction work site runoff, with pollution pathways opened via excavations and infiltration.</p>
<p><i>Duration:</i>                  Duration limited primarily to the dewatering phase of the two-year construction period.</p>
<p><i>Mitigation:</i>                  Effects on groundwater levels and flows mitigated by carrying out dewatering operations in accordance with EA best practice guidelines for protection of groundwater resources<sup>10</sup>.                  Effects on groundwater quality avoided through implementation of best practice construction site drainage management and pollution prevention measures in line with CIRIA guidance.</p>

**Operation**

**Table 11-4: Road Drainage and the Water Environment - Effects and Mitigation on Watercourses crossed by the Scheme - Operation**

Receptor – Main Dyke, Pool Foot Creek and unnamed ordinary watercourses
<p><i>Nature of Effect:</i>                  Increased flood risk caused by new watercourse crossings and/or modification of existing crossings and linked loss of floodplain storage. Detriment to the current land drainage regime due to the addition of impermeable land cover.                  Water quality detriment due to receipt of highway runoff (routine runoff and in an accidental spillage scenario).</p>
<p><i>Duration:</i>                  Lifetime of the Scheme</p>

<sup>9</sup> Construction Industry Research and Information Association

<sup>10</sup> Approach to Groundwater Protection (Environment Agency, 2017). Accessible online at <https://www.gov.uk/government/publications/groundwater-protection-position-statements>



<b>Receptor – Main Dyke, Pool Foot Creek and unnamed ordinary watercourses</b>
<p><i>Mitigation:</i></p> <p>Additional mitigation to that outlined in paragraph 4.5.3 includes:</p> <p>Flood risk effects would be avoided by ensuring no loss of floodplain storage and through the design and construction of appropriate watercourse crossings informed by detailed flood risk modelling results and in accordance with the EA/Lead Local Flood Authority permitting regimes.</p> <p>Removal of the constraint on Main Dyke caused by the existing Skippool Bridge and its replacement with a larger bridge.</p> <p>Attenuation would be provided to ensure no increase in rainfall runoff discharge rates. Highway drainage would be treated using features like wetlands to ensure no detrimental effects on the water quality of receiving water features.</p>

**Table 11-5: Road Drainage and the Water Environment - Effects and Mitigation on Groundwater Resources during Operation**

<b>Receptor – Bedrock and superficial aquifers</b>
<p><i>Nature of Effect:</i></p> <p>Long term changes in groundwater levels/flow paths due to the creation and long-term drainage of cuttings.</p>
<p><i>Duration:</i></p> <p>Lifetime of the Scheme</p>
<p><i>Mitigation:</i></p> <p>Additional mitigation to that outlined in paragraph 4.5.3 includes:</p> <p>Effects on groundwater levels and flows mitigated by implementing an appropriate drainage solution for the section of the Scheme that would be in cutting.</p>

## 12 GEOLOGY AND CONTAMINATED LAND

### 12.1 Introduction

- 12.1.1 This Section provides the geology and contaminated land baseline data, identifies additional data to be obtained and indicates potential effects (during construction and operation) as well as mitigation measures that may be required to order to avoid, reduce and, if possible, remedy significant adverse effects.
- 12.1.2 This Section should be read together with Figure 12.1 Geology and Contaminated Land Features at Appendix A.

### 12.2 Existing Environmental Conditions

#### Published Geology

- 12.2.1 The Scheme’s Preliminary Sources Study Report (PSSR) has been reviewed to obtain information on the geological setting of the site.
- 12.2.2 In preparation of the PSSR, the British Geological Survey (BGS) 1:50,000 scale geological map, Sheet 66 Blackpool (solid and drift), 1975 has been reviewed together with the accompanying geological memoir: ‘The Geology of the country around Blackpool’.
- 12.2.3 The generalised geological sequence (top-down) of the area under study is presented below in Table 12-1 with the distribution of drift and solid deposits shown on Figure 12.1 at Appendix A.

**Table 12-1: Geology and Contaminated Land - Geological Sequence**

Geological Formation	Group
Tidal Flat Deposits <sup>11</sup>	-
Peat	-
Glaciofluvial Deposits	-
Glacial Till	-
Singleton Mudstone (Sidmouth Mudstone Formation) <sup>12</sup>	Mercia Mudstone Group

- 12.2.4 The published geology mapping indicates that the bedrock geology is the Sidmouth Mudstone Formation which is part of the Mercia Mudstone Group.
- 12.2.5 Superficial deposits are present above the mudstone formation across the Scheme. Descriptions are detailed in Table 12-2.

<sup>11</sup> Previously known as River Alluvium

<sup>12</sup> Previous nomenclature includes the Kirkham, Singleton and Hambleton Mudstones as described in the PSSR.

**Table 12-2: Geology and Contaminated Land - Geological Descriptions**

Geological Formation	Description
Tidal Flats Deposits	<p>Normally a consolidated soft silty clay, with layers of sand, gravel and peat. Characteristically low relief; from the tidal zone.</p> <p>At the eastern end of the Scheme by Bankfield Manor (about 600m west of Windy Harbour Junction), Tidal Flat deposits are encountered in the vicinity of a minor watercourse that discharges into the River Wyre. It is also encountered in low lying ground off Skippool Channel just east of the Main Dyke Bridge due west the Little Singleton.</p>
Peat	<p>Organic rich-clay humic deposits. Deposits of peat have also accumulated in hollows on the surface of the till and in the Skippool Channel (Main Dyke valley), a thickness of 1m is reported but elsewhere up to 3m.</p>
Glaciofluvial Deposits	<p>Sand and gravel, locally with lenses of silt, clay or organic material; of glaciofluvial origin.</p> <p>There is an area of Glaciofluvial deposits on the western side of the Scheme.</p>
Till	<p>Glacial Till is the extremely heterogeneous sediment of a glacier; till is the part of glacial drift deposited directly by the glacier. Its content may vary from clays to mixtures of clay, sand, gravel, and boulders.</p> <p>This is mapped as being present across the Scheme located above the mudstone bedrock. It thus marks an angular disconformity with the strata below.</p>
Sidmouth Mudstone Formation <sup>13</sup>	<p>This formation which is the bedrock across the Scheme consists of dominantly mudstone and siltstone, red-brown with common grey-green patches and spots. The mudstones are mostly structureless with a blocky weathering habit.</p>

### Geodiversity

- 12.2.6 A review of the JNCC Geological Conservation Review, MAGIC website and GeoLancashire website indicates there are no geodiversity heritage sites, Regionally Important Geology Sites (RIGS) or geological SSSI with 1km of the Scheme.

### Mines and Mineral Deposits

- 12.2.7 From the PSSR, based on a review of the Coal Authority’s online Interactive Map viewer, there are no historical areas of coal mining in the study area. A review of the British Geological Society (BGS) online interactive map viewer doesn’t indicate historical coal mine workings in the vicinity of the Scheme.

<sup>13</sup> Previous nomenclature includes the Kirkham, Singleton and Hambleton Mudstones as described in the PSSR.

- 12.2.8 The operation of sand and gravel extraction was potentially undertaken adjacent to the A585 285m east of Skippool.
- 12.2.9 Excavations for clay for local brickworks was undertaken at Poulton-le-Fylde. Within the area numerous small pits typically 1.0 to 1.5m deep were excavated for the purpose of agricultural soil improvement a process called marling. The numerous ponds present are thought to be pooled rainwater or possibly groundwater standing in these excavations.

### **Hydrogeology and Hydrology**

- 12.2.10 Hydrogeology and hydrology are detailed in Section 11.

### **Historical Development / Potentially Contaminated Land Uses**

- 12.2.11 Skippool developed as a port through the 1600s dealing in mahogany and flax with the Baltic ports and coastal trade with farm produce to Liverpool, Lancashire and Cumbria.
- 12.2.12 There was a cluster of businesses in the vicinity of the harbour including a bone factory and warehouse type units. An animal feed storage unit was also located nearby eventually closing when the port of Fleetwood opened in the 1840s.
- 12.2.13 The Historic Environment Record entry for the Main Dyke notes it was constructed (that is – man made) in 1731 as a drainage ditch for Marton Mere to Skippool.
- 12.2.14 The railway from Preston to Fleetwood through Poulton-le-Fylde was constructed in 1840 which lies to the west of the Scheme.
- 12.2.15 Early maps show the presence of numerous ponds within the study area some of which appear to have been infilled in later editions.
- 12.2.16 Available online historical maps show the gradual development along the edge of the A585 throughout the 20th century. Many of these are noted as being gardening nurseries. A small sand and gravel quarry is noted adjacent to the A585 at Skippool on the 1847 OS map. The 1892 map shows the location of three small sand and clay pit to the south of Carr Woods.
- 12.2.17 The Garstang New Road from Little Poulton across the Main Dyke, through Little Singleton to Windy Harbour was built sometime in the early 20th century (circa 1930). Either side of Skippool former marshland have been reclaimed (1955 and 1969).
- 12.2.18 There are a significant number of ponds that are located in the agricultural land southwest of the A585. Some of the ponds are located within the 50m buffer. Based on the information that is currently available it is unclear whether the pond formations are as a result of excavation for purpose of livestock watering or marl pit excavation. Marl pits were excavated generally at a depth no greater than 1.5m and it is likely that the many of the ponds would be about this depth within the study area. Deeper ponds may occur if the underlying calcareous till was also exploited.
- 12.2.19 There is a historic tank recorded at the western end of the Scheme. A petrol station associated with the Skippool Service Station is also currently indicated in this area.
- 12.2.20 Amounderness Way running north-westwards from Skippool roundabout was built in the early 1970's across low lying farmland.
- 12.2.21 There is an area of mapped artificial ground (Made ground) at the western end of the Scheme.

**Landfill sites**

12.2.22 The following table details the landfill sites within the 1km study area (See Figure 12.1 at Appendix A).

**Table 12-3: Geology and Contaminated Land - Landfill Sites**

Landfill	Dates	Type of Waste	Distance from Scheme
Skippool Marsh	1929-1972	Commercial	500m north of western end
Skippool Creek	1929-1972	Household Leachate Control measures taken place	500m north of western end
Poulton Railway Cutting	Until 1989	Inert	750m south west
Fylde Skip Hire	Unknown	Unknown	675m southwest of the central section
Poulton Industrial Estate Kingscourt Development	Unknown	Inert Non-Biodegradable	900m south west of the central
Windy Harbour holiday centre	Until 1989	Inert / Special	750m north of the eastern end
Larbreck Hill Farm	1978	Inert	700m to the east of the end
Larbeck Gardens	1955-1963	Industrial / commercial and Household	750m east of the end

12.2.23 Whilst the landfill sites detailed above are within 1km study area, they are all some distance from the Scheme and have been present for many years. It is considered unlikely that these would have an impact of importance to the design of the Scheme, however this would be investigated during the Ground Investigation (see Section 12.3).

**Unexploded Ordnance (UXO)**

12.2.24 A preliminary desk study was undertaken by Zetica (UXO specialists) for the Scheme which concluded that no readily available records have been found to indicate bombs fell within the study area, which was in a region with 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. It is considered that the site is likely to have a low UXO hazard level.

**12.3 Other baseline information to be obtained / surveys to be undertaken and limitations**

A complete set of historical mapping would be reviewed to understand the historic land uses that could have resulted in ground contamination that may be mobilised by the construction of the Scheme.

- 12.3.1 A Ground Investigation is currently underway to inform the Scheme design and the factual and interpretation reports would feed into the ES. Chemical analysis would be undertaken on soil and groundwater encountered. Checks would be made on presence or otherwise of hazardous ground gases or vapours. The results would be reviewed to inform the likelihood for disturbance of contaminated materials and the effect on sensitive receptors. Land stability would be assessed based on the results of the Ground Investigation and if required, appropriate mitigation measures incorporated into the design.
- 12.3.2 Consultations would be undertaken with local authorities; Wyre Borough and Fylde Borough, and EA to obtain additional baseline information along the Scheme.

**12.4 Potential Effects and Mitigation Measures**

**Aspects Scoped into and out of the Assessment**

- 12.4.1 The following aspects have been scoped in to the EIA on the basis that potentially significant effects cannot be ruled out at this stage:
  - Potential contamination impacts associated with construction of the Scheme
- 12.4.2 As there is little geological interest within the study area it is proposed geology is scoped out of further assessment.
- 12.4.3 Operational impacts have been scoped out. The main impact is likely to be from contaminated land and the potential effects on hydrogeology and hydrology. These would be dealt with during the construction phase via the application of mitigation measures. Once constructed the road itself would act as a barrier to the underlying ground conditions and road users would not come into contact with it on a day to day basis.
- 12.4.4 The potential effects of the Scheme during construction and operation and the measures proposed to manage them are outlined below.

**Construction**

**Table 12-4: Geology and Contaminated Land - Effects and Mitigation on Geology in relation to contaminated land - Construction**

Receptor – Geology in relation to contaminated land
<p><i>Nature of Effect:</i>                      Spread or mobilisation of pre-existing (historic land use) contamination and creation of contamination during construction e.g. within the construction compound areas / general works</p>
<p><i>Duration:</i>                      During the two-year construction period.</p>



Receptor – Geology in relation to contaminated land
<p><i>Mitigation:</i></p> <p>In addition to mitigation outlined in paragraph 4.3.3, prior to the construction works, the results of the intrusive Ground Investigation would be reviewed to establish the location of contaminated soils. This data would be used to inform a Conceptual Site Model. Where unacceptable risk was identified, remedial action would be warranted within the Scheme design.</p> <p>A range of mitigation measures and response actions would be included. These include, for example:</p> <p>In areas to be excavated or during topsoil stripping activities, unsuitable (contaminated) soils would be removed prior to the main works.</p> <p>An Emergency Response / Spill Response Plan would be produced by the Main Works Contractor.</p> <p>Environmental design measures to prevent pollution incidents to receptors during the construction phase would be provided in the form of a CEMP and Pollution Prevention Plan. This would be developed further by the Main Works Contractor to ensure best practice is utilised and the receptors are protected. The contractor would prepare detailed method statements and appropriate controls to protect receptors. A Pollution Prevention Plan would be produced for activities such as excavation and dewatering, storage of fuels, chemicals and oils, vehicle washing, pollution control and emergency contingency.</p>

**Table 12-5: Geology and Contaminated Land - Effects and Mitigation on Geology in relation to Human Health - Construction**

Receptor – Human Health (Local Residents near to Scheme)
<p><i>Nature of Effect:</i></p> <p>Fugitive dust (potentially containing contaminants) could be generated by excavation / earth movements during construction of Scheme. Depending on weather conditions, this could be blown into nearby residential properties.</p>
<p><i>Duration:</i></p> <p>During the two-year construction period.</p>
<p><i>Mitigation:</i></p> <p>In addition to mitigation outlined in paragraph 4.3.3, the results of the intrusive Ground Investigation would be reviewed to establish the locations of contaminated soils. During the construction of the Scheme, excavated soils would be appropriately stored to ensure that if dust is generated in dry weather periods, it is not directed towards properties. Other best practice measures such as damping down areas, vehicle wheel washing, covering stockpiles containing soils would be utilised to reduce the impacts from dust.</p>

**Table 12-6: Geology and Contaminated Land - Effects and Mitigation on Groundwater in relation to contaminated land - Construction**

Receptor – Groundwater in relation to contaminated land
<p><i>Nature of Effect:</i>                      Contaminants being mobilised during construction works and migrating into underlying groundwater and wider water environment</p>
<p><i>Duration:</i>                      Mainly during the two-year construction period.</p>
<p><i>Mitigation:</i>                      In addition to mitigation outlined in paragraph 4.3.3, prior to construction works, an intrusive Ground Investigation would be undertaken to establish the locations of contaminated soils and existing groundwater quality in the area. To reduce the spread of contaminants, contaminated soils within areas to be excavated would be removed prior to the main works. Materials would be treated so they can be reused within the Scheme or if this is not possible materials would be disposed of at an appropriate waste facility.                      Band drains or other geotechnical techniques may be used to aid with the consolidation of new earthwork features. Appropriate techniques would be reviewed, and appropriate design would be included to safeguard the underlying groundwater regime to ensure that groundwater quality is not compromised. Materials used to create the embankments (site won or imported) would be chemically analysed to ensure that they are suitably chemical quality as detailed in the earthworks specification.</p>

**Table 12-7: Geology and Contaminated Land - Effects and Mitigation on Surface Water in relation to contaminated land - Construction**

Receptor – Surface Water in relation to contaminated land
<p><i>Nature of Effect:</i>                      Contaminants being mobilised during construction works and migrating into surface water and wider water environment</p>
<p><i>Duration:</i>                      Mainly during the two-year construction period.</p>
<p><i>Mitigation:</i>                      Excavated materials would be appropriately stored to ensure that water runoff from stockpiles does not enter surface water. If necessary stockpiles would be covered. Pollution prevention best practice protocols would be adopted to ensure contamination do not enter surface water.</p>

## 13 CLIMATE

### 13.1 Introduction

13.1.1 This Section indicates potential risks to be considered in terms of climate change adaptation and greenhouse gas emissions (GHG) as well as mitigation measures that may be required to order to avoid, reduce and, if possible, remedy significant adverse effects.

### 13.2 Climate Change Adaption

#### Construction

13.2.1 The potential climate change risks to the Scheme during construction and the measures proposed to help adapt to these risks are outlined in Table 13-1.

**Table 13-1: Climate - Climate Change Adaptation - Potential Effects and Mitigation Measures during Construction**

Risk to Construction Design	Potential Topic Areas/Receptors that could be Affected	Potential Impact	Mitigation that needs to be incorporated into the design or into relevant management plans
Increase in frequency and intensity of heavy rainfall events/flooding	Road drainage and water management, including surface water resources and flood risk and land drainage Geology and Contaminated Land, including soils	Wetter conditions may exacerbate precipitation and run-off which may, in turn lead to an increase in soil erosion on site and may increase sediment loads to water courses. Flood risk may also increase	The impacts of an increased risk of dust generation would be managed using standards techniques for damping down soil stores and covering as appropriate. Standard good site management practices following the CEMP would be in place Emergency response procedures would be incorporated within the CEMP
Increase in frequency of extreme weather events	Road drainage and water management, including surface water resources and flood risk and land drainage Geology and Contaminated Land, including soils	Related to the above issue, there is a risk of an increase in extreme weather events such as storms which may disrupt construction and cause flooding	with respect to extreme weather events including storms and droughts Site works would comply with relevant pollution prevention guidelines and CIRIA publications as far as reasonably practicable to ensure against the risk of sediments causing pollution of water courses under all conditions including during extreme weather events. A FRA is being prepared which considered the risk of climate change in its scenarios

## Operation

13.2.2 The potential climate change risks to the Scheme during operation and the measures proposed to help adapt to these risks are outlined in Table 13-2.

**Table 13-2: Climate - Climate Change Adaptation - Potential Effects and Mitigation Measures during Operation**

Risk to Design	Potential Topic Areas/Receptors that could be Affected	Potential Impact	Mitigation that needs to be incorporated into the design or into relevant management plans
Hotter and drier / drought conditions	Landscape, including landscape character and visual receptors	Hotter, drier conditions may affect the ability of landscape planting or ecological habitat creation to survive Exacerbate the risks of ground settlement	Operational drainage design would need to incorporate resilience to climate change in terms of both treatment and attenuation prior to discharge into the receiving water environment Operational design of the Scheme would be informed by the findings and recommendations of a flood risk assessment that includes scenarios to account for climate change
Increase in frequency and intensity of heavy rainfall events/ flooding	Landscape, including landscape character and visual receptors Road drainage and the water management, including surface water resources and flood risk and land drainage	Triggering surface water and river flooding. Increase flood risk, discharge volume and surface water run-off Loss of species (landscape planting) in certain areas, because soils become water saturated and can no longer support existing species Damage to ecological habitat mitigation Road drainage systems may struggle to cope with increase run-off and to attenuate contaminants	Regular maintenance of water course crossings and drainage infrastructure Planting suitable species for future climate conditions
Increased wind speed	Landscape, including landscape character and visual receptors	Impact on landscape planting through potential tree losses	

Risk to Design	Potential Topic Areas/Receptors that could be Affected	Potential Impact	Mitigation that needs to be incorporated into the design or into relevant management plans
		Increase tree loss, habitat loss and/or fragmentation	
Hotter and wetter conditions	Landscape, including landscape character and visual receptors; and Biodiversity, including habitats and wildlife species.	Increase in growing season and increased rate of growth of planted vegetation Increase in pests and diseases leading to loss of planted vegetation and defoliation making species more susceptible to external stress Increase in temperatures may affect viability of biodiversity mitigation	
Increase in frequency of extreme weather events	Landscape, including landscape character and visual receptors Biodiversity, including habitats and wildlife species Road drainage and the water management, including surface water resources and flood risk and land drainage	An increase in extreme weather events (e.g. storms) may exacerbate the issues identified above in terms of tree/habitat damage and road drainage capacity	

### 13.3 Greenhouse Gas Emissions

#### Construction

13.3.1 Carbon Management is one of five key themes established in the Highways England Sustainable Development Strategy. This describes the Scheme's approach to carbon management as being to 'aim to reduce the carbon footprint and work closely with suppliers to reduce emissions from network related activity' and also release the value of lower carbon through reducing fuel, energy and raw material consumption and all waste generation.

13.3.2 While international standards and guidance documents exist for compiling

greenhouse gas inventories, there are currently no accepted criteria for assessing GHG emissions impacts and for quantifying the GHG emissions of construction activities. In the absence of such guidance, the assessment would be undertaken for the ES (when data would become available) using professional judgement and utilising the Highways England Carbon Tool, the Scheme’s Bill of Quantities and Bath University’s Inventory of Carbon and Energy (ICE) Database.

13.3.3 The potential effects of the Scheme during construction and the measures proposed to manage them are outlined in Table 13-3.

**Table 13-3: Climate - GHG Emission during the construction phase**

Receptor – Air Quality, People and Communities and Biodiversity
<p><i>Nature of Effect:</i></p> <p>In order to construct the Scheme, a large amount of natural resources (i.e. raw materials and energy) would be required, which would contribute towards GHG emissions and therefore climate change.</p> <p>The construction phase of the Scheme would also have the potential to increase GHG emissions due to:</p> <ul style="list-style-type: none"> <li>• Emissions from construction plant onsite</li> <li>• Emissions from water consumption</li> <li>• Exhaust emissions from construction phase road traffic</li> </ul> <p>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.</p>
<p><i>Duration:</i></p> <p>During the two-year construction period and during the life time of the Scheme.</p>
<p><i>Mitigation:</i></p> <ul style="list-style-type: none"> <li>• Implementation of Scheme specific commitments within a CEMP</li> <li>• Publicly Available Specification (PAS) 2080<sup>14</sup> would be adopted for the ES as a best practice framework for managing and minimising the whole lifecycle carbon emissions, the approach would continue to be developed and applied to the Scheme</li> <li>• Materials with an optimum design life and less embodied carbon would be specified. Recycled materials or materials sourced from nearer to site would be employed in order to minimise transportation movements;</li> <li>• 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</li> <li>• There currently is no specific guidance or GHG emissions threshold which if exceeded is considered significant. Nevertheless, GHG emissions from relevant construction activities would be calculated and monitored</li> </ul>

<sup>14</sup> PAS 2080:2016 Carbon management in infrastructure



**Operation**

- 13.3.4 While international standards and guidance documents exist for compiling GHG Inventories, there are currently no accepted criteria for assessing GHG emissions impacts and for quantifying the GHG emissions during operation. In the absence of such guidance, the assessment would be undertaken for the ES (when data would become available) using professional judgement and utilising WebTAG and carbon sequestration from tree planting data.
- 13.3.5 The potential effects of the Scheme during construction and the measures proposed to manage them are outlined in Table 13-4.

**Table 13-4: Climate - GHG Emission during the construction phase**

Receptor – People and Communities and Biodiversity
<p><i>Nature of Effect:</i>                      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.</p>
<p><i>Duration:</i>                      During the life time of the Scheme.</p>
<p><i>Mitigation:</i>                      There currently is no specific guidance or GHG emissions threshold which if exceeded is considered significant. Nevertheless, GHG emissions from relevant operation activities would be calculated and monitored.</p>

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## **14 MATERIALS**

### **14.1 Introduction**

- 14.1.1 This materials Section identifies additional data to be obtained and indicates potential effects (during construction) as well as mitigation measures that may be required to order to avoid, reduce and, if possible, remedy significant adverse effects.
- 14.1.2 'Materials' are defined as the use of material resources and the generation and management of waste (Interim Advice Note 153/11, Guidance on the Environmental Assessment of Material Resources Highways England 2011). This Section looks at materials required to construct the Scheme, waste produced by the Scheme and whether or not there is capacity to source and dispose of this waste in the region.
- 14.1.3 It has been identified that there is likely to be insufficient earthwork material available on-site to construct features such as embankments and landscaping mounds. Materials are, therefore, likely needed to be imported from outside of the area. For this Scheme this is a more important issue than the disposal of waste material.

### **14.2 Other baseline information to be obtained / surveys to be undertaken and limitations**

- 14.2.1 Information would be gathered to inform the Materials ES Chapter on the types and quantities of materials required to construct the Scheme together with where materials could potentially be sourced. Much of this information would be obtained from the Scheme's draft bill of quantities.
- 14.2.2 The results of the recent Ground Investigation would be used to inform the cut and fill imbalance (i.e. the difference between quantities of materials excavated from the ground on-site and the quantities used to build up features such as embankments) and the need to use potential borrowpits.

### **14.3 Potential Effects and Mitigation Measures**

#### **Aspects Scoped into and out of the Assessment**

- 14.3.1 The following aspects have been scoped in to the EIA:
- The construction effects of the Scheme would be considered in relation to materials (types, quantities etc) and waste (generation and disposal)
- 14.3.2 During the lifetime of the Scheme, only a limited quantity of material for maintenance would be required therefore impacts associated with materials during operation are scoped out.
- 14.3.3 The potential effects of the Scheme during construction and the measures proposed to manage them are outlined below.

**Construction**

**Table 14-1: Materials - Effects and mitigation relating to materials – Construction**

Receptor – Materials – type, quantity and source
<p><i>Nature of Effect:</i></p> <p>Specific quantities and types of materials required for the construction Scheme are currently being determined. However, for a typical road construction, materials will be required for the following:</p> <ul style="list-style-type: none"> <li>● Fencing and environmental barriers</li> <li>● Road restraint systems</li> <li>● Drainage</li> <li>● Earthworks (including embankments and screen mounding)</li> <li>● Pavement</li> <li>● Road surfacing</li> <li>● Kerbs, footways and paved areas</li> <li>● Verge signs</li> <li>● New lighting and cabling</li> <li>● New structures (including excavations, bridges and retaining walls)</li> <li>● Traffic signals</li> </ul> <p>The sourcing of these materials, their amounts and availability would be explored further as the design develops.</p> <p>Excavated material generated would be targeted for embankments and screen mounding where this is feasible (the suitability of material for this use would be determined following the ground investigation analysis). However, the current volumetric analysis indicates that there would not be sufficient excavated material of the right type to form the proposed embankments and screen mounding – even with the use of local borrow pits. This would mean material would need to be imported to site for these feature – specific details and potential sources along with associated risks and impacts would be outlined in the ES.</p>
<p><i>Duration:</i></p> <p>Through-out the two-year construction period.</p>
<p><i>Mitigation:</i></p> <p>The use of local borrowpits would be explored further to address the shortage of material for embankments and screen mounding following the Ground Investigations. This may result in either a reduction or increase in the cut and fill imbalance.</p>

**Table 14-2: Materials - Effects and mitigation relating to waste management and landfill sites - Construction**

Receptor – Waste Management and Landfill Sites within reasonable proximity of the Scheme
<p><i>Nature of Effect:</i></p> <p>Large quantities of waste are not expected to be generated as a result of construction of the Scheme. Types of waste anticipated to be generated would largely be associated with site clearance and the demobilisation of construction compounds once the Scheme has been constructed. It is not currently considered that local waste management facilities in the region would have difficulty (in terms of capacity) in accepting the amounts of waste proposed.</p>
<p><i>Duration:</i></p> <p>Through-out the two-year construction period.</p>
<p><i>Mitigation:</i></p> <p>Impacts would be controlled and managed during construction through the implementation of Scheme specific commitments outlined in a CEMP, for example the contractors would be required to:</p> <ul style="list-style-type: none"> <li>▪ Promote opportunities for the potential reusing and recycling of all material resources and waste</li> <li>▪ Sort and segregate waste into different waste streams (where technically and economically feasible)</li> <li>▪ Manage material use to maximise the environmental and Scheme’s benefits from the use of surplus materials</li> </ul> <p>A waste to landfill target would be established.</p>

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## **16 ASSESSMENT OF CUMULATIVE EFFECTS**

### **16.1 Introduction**

16.1.1 Cumulative effects are where multiple effects occur on a particular receptor (e.g. a residential property, a wildlife site or a heritage asset). This could be as a result of multiple effects from the Scheme affecting one receptor (e.g. air emissions, noise, visual intrusion) or multiple effects from this Scheme and 'other development' in the area. This could result in numerous small effects adding up to something larger. It would be important for the ES to consider cumulative effects and to report these clearly.

16.1.2 This Section should be read together with Figure 15.1 Planned Development at Appendix A.

### **16.2 Existing Environmental Conditions**

16.2.1 The effects (after mitigation measures have been implemented) for each individual environmental assessment topic would be collated to make an informed assessment of cumulative effects on receptors from the Scheme alone. This would not be available until completion of the ES.

16.2.2 A desk study has also been undertaken to search for 'other development' that could have potential to result in cumulative effects in combination with the Scheme. These include the following and their locations are also presented on Figure 15.1 at Appendix A:

- 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 (Drawing Reference 13)
- 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 (Drawing Reference 1)
- 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 (Drawing Reference 2)
- 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 (Drawing Reference 3)
- 15/0337 - 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 Plumpton, Lancashire (Drawing Reference 4)
- 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 (Drawing Reference 5)

- 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 (Drawing Reference 15)
- 15/00298/LMAJ - Erection of a residential development comprising 519 dwellings (11 five-bed dwellings, 166 four-bed dwellings, 242 three-bed 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 (Drawing Reference 6)
- 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 (Drawing Reference 8)
- Preston Western Distributor (PWD) Connecting the M55 via a link road south to the A583 including an access road East to West with Preston (Drawing Reference 9)
- Associated with PWD road M55 Junction 2 proposals - The PWD will connect to the M55 in the north via a new Junction 2 (Drawing Reference 10)
- 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 (Drawing Reference 11)
- 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 (Drawing Reference 12)
- 17/00050/REMMAJ - Reserved matters application for the erection of 160 dwellings with associated works Land Off Lambs Road Thornton-Cleveleys Lancashire (Drawing Reference 16)
- 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 (Drawing Reference 17)
- 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 hedgerows and landscape features. Westby with Plumpton, Blackpool (Drawing Reference 7)



- 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 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 (Drawing Reference 18)
- 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 (Drawing Reference 14)

### **16.3 Other baseline information to be obtained / surveys to be undertaken and limitations**

- 16.3.1 A cumulative effects assessment would be presented in the ES following the completion of all environmental assessments presented in each chapter.
- 16.3.2 The 'other development' listed in paragraph 15.2.2 would be further developed and more detail gathered in order to inform the assessment.

### **16.4 Potential Effects and Mitigation Measures**

- 16.4.1 Potential effects from the Scheme may arise on the following receptors:
- Residential receptors due to noise, air quality and visual effects
  - Listed buildings due to noise, dust and visual effects
  - PRoW due to severance and visual effects
  - Water courses due to pollution, flow conveyance and modifications to them which may affect protected species
- 16.4.2 The list above is not exhaustive, and a full assessment would be undertaken upon completion of each environmental assessment within the ES. Following this assessment, if required, mitigation would be developed to reduce / minimise / avoid cumulative effects.
- 16.4.3 With regard to cumulative effects with 'other development', the following have potential to occur and will be considered further for inclusion in the ES:
- A greater amount of land associated with wintering birds and the adjacent Morecambe Bay Ramsar site and Morecambe Bay and Duddon Estuary SPA in the may be affected
  - A number of 'other development' in the locality being under construction at the same time as the Scheme which may result in a greater amount of construction traffic using local roads
  - Potential for greater effects on local air quality in combination with 'other development' and the Scheme (however, note that 'other development' is

considered within the traffic data and therefore within the air quality modelling for the Scheme)

- Potential for greater effects noise on the local noise environment (however, note that 'other development' is considered within the traffic data and therefore within the noise modelling for the Scheme)
- A greater loss of best and most versatile agricultural land due to land take from 'other development' together with the Scheme
- Potential for 'other development' to introduce more receptors into the landscape study area

16.4.4 The list above is not exhaustive, a detailed assessment would be undertaken for ES in accordance with the Planning Inspectorates Advice Note 17. Following this assessment, if required, mitigation would be developed to reduce / minimise / avoid cumulative effects.

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**17.2 Glossary**

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, hydrofluorocarbons 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.

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# Appendix A – Figures

# Appendix B – Gazetteer