



Volume 10

ON BEHALF OF
Satnam Millennium Ltd

IN RESPECT OF

Outline application for a new residential neighbourhood including C2 and C3 uses; local centre including food store up to 2000m², A1-A5 (inclusive) and D1 use class units of up to 600m² total (with no single unit of more than 200m²) and family restaurant/ pub of up to 800m² (A3/A4 use); site for primary school; open space including sports pitches with ancillary facilities; means of access and supporting infrastructure at Peel Hall, Warrington

AT PEEL HALL, WARRINGTON

COMPENDIUM VERSION FOR USE AT INQUIRY ONLY (Volume 10)

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**Landscape
Institute**
Registered practice

17 Chorley Old Road,
Bolton,
Lancashire
BL1 3AD

Tel: 01204 393 006

Fax: 01204 388 792

E-mail: info@appletons.uk.com

www.appletons.uk.com @Appletons_LArch

Landscape Architecture Ecology Environmental Planning & Assessment Arboriculture

appletons



appletons

17 Chorley Old Road
Bolton
Lancashire
BL1 3AD

Tel: 01204 393006

Email: info@appletons.uk.com

Web: www.appletons.uk.com

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COMPENDIUM VERSION

This document serves the purpose of combining the text set out in volumes 2, 5 and 8 of the environmental statement and subsequent addendums for ease of use at the public inquiry into this proposal. All relevant text for each chapter is contained in this volume. This volume does not form part of the statutory ES nor its 2 addendum and has not been subject to advertisement or consultation. In situations where the reader wishes to view the statutory version of the ES and its 2 addendum the above volumes incorporate this text.

The following volume 8 chapters are replacement chapters as part of addendum 2 and therefore remain unchanged in this document:

Highways

Ecology

Noise

Air Quality

The remaining chapters are presented as originally set out and then subsequently amended.

The majority of documents and figures referred to in this document can be found in volume 9. Some documents and figures that remain unchanged from the original ES are located in volume 3.

0.0 GENERAL INTRODUCTION

- 0.1 Satnam Millennium Ltd submitted a planning application to Warrington Borough Council on 11th July 2016: the description of the development is now agreed to be amended and now reads,

“Outline application for a new residential neighbourhood including C2 and C3 uses; local centre including food store up to 2000m², A1-A5 (inclusive) and D1 use class units of up to 600m² total (with no single unit of more than 200m²) and family restaurant/ pub of up to 800m² (A3/A4 use); site for primary school; open space including sports pitches with ancillary facilities; means of access and supporting infrastructure at Peel Hall, Warrington.”

*Local employment omitted as part of addendum 2

The Environmental Statement was been prepared after consultation with the Local Planning Authority, Warrington Borough Council, and their EIA Regulation 13 Scoping Opinion issued on the 28th November 2014 (**Volume 3 Appendix APP 4**).

- 0.2 This Environmental Statement Addendum (ESA) serves to up-date where necessary due to the passage of time information contained within the original ES and addendum 1, particularly with regard to planning policy, highways, noise, air quality, ecology and socio economic.
- 0.3 A revised layout has been considered as part of this addendum. The Parameters Plan for this layout can be found under **Appendix APP 6**.
- 0.4 The purpose of this Addendum is as a result two-fold:
1. To ensure the updated survey information are fully considered, and consulted upon as part of the EIA process; and,
 2. To respond to comments relating to the findings of the original Environmental Statement and Addendum 1.
- 0.5 For reference, this ESA2 should be read alongside the ES dated July 2016 submitted with the application and the ES Addendum 1 dated January 2018, together with its associated Technical Appendices.

*Local employment omitted as part of addendum 2

- 0.6 Each EIA topic has been given a separate chapter in this ESA2. However, in some instances it is not necessary to provide any additional information and in these cases the reader will be directed to the original ES (Environmental Statement) dated July 2016 and / or ESA1 (Environmental Statement Addendum 1) dated January 2018. The numbering of sections and paragraphs within this addendum follows that contained within the submitted Environmental Statement and Addendum 1. Text should be read in conjunction with these volumes. Where there is no change to sections/paragraphs set out within the ES or ESA1, this will be referenced in the text without repetition. Where changes or supplementary information are made or provided, then new text will replace that within the ES or ESA1.

Environmental Statement Addendum Format

- 0.7 This Environmental Statement Addendum consists of four parts;

Part 1 – Environmental Statement Addendum

- 0.8 This section of the addendum in summary comprises of the following:

- Description of the Proposals
- Planning Policy and Designations
- Assessment of Impacts
- Identification of Mitigation
- Mitigation Proposals
- Identification of Residual Impacts
- Assessment of Cumulative Impacts
- Appendices

Part 2 – General Conclusions

- 0.10 This section provides a revised set of impact tables along with overall conclusions.

Non Technical Summary

- 0.11 This is a summary of results of the Environmental Statement in non-technical language and bound as a separate document.

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PART 3 – DOCUMENTS AND FIGURES (Volume 10)

(Note: the following documents and figures are updates/ supplementary information, any appendices not listed can be found in the original ES Volume 3)

BASELINE DOCUMENT AND FIGURES- (SEE FOLDER PART 1)

1

APP 6	Parameters Plan (1820_35)
APP 7	Agricultural Land Classification Map (<i>Replacing original Volume 3 Appendix APP 7</i>)
APP 14	Cross Section North-South (1820_31)
APP 16	Indicative Sports and Recreation Provision (1820_28)
APP 17	Site Location Plan (drawing number. 140367-D-002 Rev B) prepared by 3DReid

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ECO 1	Phase 1 Habitat Plan
ECO 2	Selected Raw Desk Study Data
ECO 3	Great Crested Newt Mitigation Strategy
ECO 4	Bat Mitigation Strategy
ECO 5	Hedgehog Mitigation Strategy
ECO 6	Water Vole Protection Strategy
ECO 7	Site Concerns Map (Including Invasive Species)
ECO 8	Relevant Wildlife Legislation
ECO 9	2019 Phase 1 Habitat Survey Data

- APP 1: *Detailed Phase 1 Habitat Maps (Drawings 1820-T1-A to -I)*
 - APP 2: *Site Concerns Map*
 - APP 3: *Phase 1 Survey Photographs*
- ECO 10 2019 Roosting Bat Surveys
- APP 1: *Bat Survey Plans (Drawings 1820-T2-01 & 1820-T2-02)*
 - APP 2: *Raw Data - Preliminary Bat Roost Assessment of Buildings*
 - APP 3: *Raw Data - Dusk Emergence Bat Survey*
 - APP 4: *Survey Photographs*
- ECO 11 2019 Foraging Bat Surveys
- APP 1: *Figures 1820-T3-01 & -02: Transect routes*
 - APP 2: *Figure 1820-T3-03: Overview of common pipistrelle bat activity*
Figure 1820-T3-04: Overview of noctule bat activity
Figure 1820-T3-05: Overview of soprano, nathusius & natterer's bat activity
 - APP 3: *Raw transect data*
- ECO 12 2019 Breeding Bird Survey
- APP 1: *Map 1: Peel Hall – Breeding Bird Survey Map - Visit 1*
Map 2: Peel Hall - Breeding Bird Survey Map - Visit 2
- ECO 13 2019 Barn Owl Habitat Suitability Assessment
- ECO 14 2019 Water Vole Survey
- APP 1: *Appletons Drawing 1820-T6-01: Water vole survey plan & results*
- ECO 15 2019 Great Crested Newt Survey
- APP 1: *Appletons Drawing 1820-T7-01: Pond locations and GCN Survey results*
 - APP 2: *Pond photographs*
- ECO 16 2019 Badger Survey- **(SEE SEPARATE FOLDER- Part 2)**
- APP 1: *Drawing 1820-T8-01 – Badger Survey Plan and Results*
- ECO 17 2019 Hedgerow Regulations Survey
- APP 1: *Site Map and Hedgerows*
 - APP 2: *Hedgerow photographs*

HYDROLOGY, DRAINAGE AND FLOOD RISK

Refer to Original ES and Addendum 1.

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- T10 Junction Improvement Plans
- T11 Flow Diagrams 2018
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- T13 Forecast Years Flow Diagrams
- T14 TN09 Link Capacity Text

CULTURAL HERITAGE AND ARCHAEOLOGY

Refer to Original ES and Addendum 1.

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- N2 Weather Conditions
- N3 Monitoring Data
- N4 Façade Mitigation
- N5 Short Term Assessment DSOY 2022 - DMOY 2022
- N6 Existing Receptor Locations
- N7 Short Term Assessment DSOY 2022 – DMOY 2022
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- N9 Indicative Mitigation Barrier Location
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- AQ 1 Suitability of the Site for Residential Use
- AQ 2 Diffusion tube monitoring methodology
- AQ 3 Consultation Document
- AQ 4 ADMS and Assessment Inputs
- AQ 5 Construction Dust Assessment
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- S2 Summary Tables

1.0 ENVIRONMENTAL STATEMENT PROJECT TEAM

- 1.1 The Peel Hall Environmental Statement was prepared on behalf of Satnam Millennium Limited by a project team comprising of Architects, Planners, Drainage and Hydrology Consultants, Ecologists, Environmental Consultants, Landscape Architects and Transportation Consultants. Both parts of this Addendum have been prepared by the same team members.
- 1.2 This document has been prepared by the same specialist consultants who prepared the original ES / ESA1, as set out below:
- 1.3 The following disciplines were commissioned;

Appletons	Environmental Statement co-ordination, Site Context, Project Description, Landscape Masterplanning, Landscape and Visual Amenity, and Ecology
Satnam Planning Ltd	Planning Policy Context
Transport Planning Associates	Hydrology, Drainage and Flood Risk
Highgate Transportation Ltd	Transportation and Highways
Nexus Heritage Ltd	Archaeology
Miller Goodall Ltd	Air Quality and Noise (replace Hawkins Environmental for ESA2)
Lichfields	Socio-economics, Demographic Modelling and Social Infrastructure
3D Reid	Masterplanning and Block Design

PART 1

2.0 INTRODUCTION

2.1 Purpose and Approach

- 2.1.1 Satnam Millennium Ltd propose to develop the land at Peel Hall, Warrington. The proposed new residential neighbourhood would include up to 1200 houses with new access, a neighbourhood centre, ecological enhancement and public open space. The proposals now do not include the employment floor space proposed originally. This has been omitted following the concerns expressed by Inspector Schofield in his report (October 2018) and discussions with the highways department of Warrington Borough Council. This Environmental Statement has been prepared after consultation with the Local Planning Authority, Warrington Borough Council, and their EIA Regulation 13 Scoping Opinion issued on the 28th November 2014 (**Volume 3 Appendix APP 4**).
- 2.1.2 The purpose of this Environmental Statement (ES) is to set out the assessment of the potential effects of the proposed development undertaken as part of the Environmental Impact Assessment process.
- 2.1.3 This Environmental Statement meets the requirements of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011 as amended. It is intended to be used by Warrington Borough Council to aid their consideration of the application for the development.
- 2.1.4 The relevant determining factors are:
- A) Is the site within a **sensitive area**?
- and
- B) Would there be any **significant effects** on the environment?
- 2.1.5 The ES has been prepared on the basis of the scale of the development proposed and the requirement for the inclusion of mitigation where necessary to minimise any potential adverse impacts identified at both the construction and operational phases. The safe and efficient delivery of good quality housing in Warrington Borough is a major objective at this time due to the Borough not being able to provide sufficient homes to meet its OAN. The Borough is unable to demonstrate a 5 year (plus buffer) housing land supply.
- 2.1.6 The preparation of the ES has utilised guidance within the following documents: *Preparation of Environmental Statements for Planning Projects that require Environmental Assessment: a Good Practice Guide* (DoE 1995) and Department of the Environment Circular 02/99 *Environmental Impact Assessment*.

2.1.7 This ES Addendum 2 Part 1 has been prepared on the basis of the following documents:

- Parameters framework plan (**Appendix APP 6**) prepared by Appletons, landscape architects and environmental consultants, including areas for landscape retention, ecological features and proposed planting screen planting.
- Access Arrangement Plans (**Appendix T6**) prepared by Highgate Transportation Ltd.
- Site Location Plan.

Environmental Statement Format

2.2 This Environmental Statement consist three volumes;

2.2.1 Volume 7 – Non Technical Summary

This is a summary of results of the Environmental Statement in non-technical language.

2.2.2 Volume 8 – Environmental Statement

This is the main section of the Environmental Statement and in summary comprises of the following;

- Description of the Proposals
- Planning Policy and Designations
- Assessment of Impacts
- Identification of Mitigation
- Mitigation Proposals
- Identification of Residual Impacts
- Assessment of Cumulative Impacts

2.2.3 Volume 9 – Appendices

This volume is a compilation of all the evidential and illustrative material to support the text in Volumes 7 and 8.

Scope

2.3 A Scoping Study was undertaken during the initial stages of the Environmental Impact Assessment process, in order to define the terms of reference. A Scoping Report was prepared by The Appleton Group and submitted to Warrington Borough Council on the 23rd October 2014. A copy of the letter is set out at **Volume 3 Appendix APP 3** and has been agreed in principle with Warrington Borough Council in a letter dated 28th November 2014. The Scoping Study identified the main areas for consideration within the ES as: -

- Highways and transportation
- Hydrology, drainage and flood risk
- Ecology and Nature Conservation
- Landscape and Visual Impact
- Archaeology/historic environment
- Noise pollution
- Air quality
- Social Infrastructure
- Waste generation
- Cumulative impacts
- Planning context and alternative sites.

Consultations

2.4 Consultations on the content of individual elements of the Assessment were undertaken by Warrington Borough Council as follows.

Environment Agency

Highways Agency

Public Health

HSE

Natural England

Coal Authority

Greater Manchester Ecology Unit

WBC Highways Department

Environmental Protection

Cheshire Archaeology Planning Advisory Service

Flood Risk Officer

Sport England

2.5 The Development Proposals

Description

- 2.5.1 The proposals subject of this addendum are for the construction of a new residential neighbourhood comprising up to 1200 houses. The location of the site is shown on **Volume 3 Appendix APP 1**.
- 2.5.2 **Appendix APP 6** is the Parameters Plan for the development. The Parameters Plan has planning status as it sets out the general disposition of separate land uses on the site and also the maximum heights of buildings and/ or infrastructure (vertical parameters) to be located within each development zone. The Parameters Plan shows the main constraints and opportunities for development such as vegetation to be retained together with proposed new planting and areas of open space. It is anticipated that the Parameters Plan will form the basis of outline planning permission for the site upon which reserved matters applications can be conditioned, as set out in the planning application covering letter dated 11th July 2016. Formal approval for vehicular access to the site is also sought at this stage of the approval process, based on the submitted plans (**Appendix T6**). As part of the EIA process, the proposed layout has undergone various amendments in response to baseline information gathered. The proposed layout inherently minimises some of the potential impacts identified especially in respect of habitats, protected species, visual amenity and landscape character. This is reflected in the Parameters Plan.

The Housing

- 2.5.3 The proposed residential development will consist of a mixture of apartments that will be 3-4 storeys high and houses 2-3 storeys high. The field patterns and existing landscape features have provided a strong driver to the layout of the outline scheme. The houses and apartments would be of high quality design and details of a typical design approach for buildings are set out in the design and access statement.

Other Uses

- 2.5.4 A local centre for retail and services also forms part of the application. This will comprise of a food store of up to 2000m² and other ancillary stores and food outlets of up to 600m². There is scope within the local centre for additional uses such as healthcare and local services. A primary school site and public open space also form part of the proposals.
- 2.5.5 Formal open space for sports is provided in two way, firstly as a replacement for the Mill Lane playing fields and secondly as a significant upgrade of the council owned facility at Radley Common.

- 2.5.6 Informal open space is to be created on the site as an extension of Peel Hall Park to the south east, up through the center of the site, connecting notable public areas outside the site (Radley Woodland Plantation and Radley Common linking to the PRoW thereby creating a significant area of open space to the south of the motorway. The whole network will link east/ west/ north/ south and will be fully accessible to the public.

Access

- 2.5.7 The proposed vehicular access to the site would be taken off a number of roads around the perimeter of the site including Poplars Avenue to the South, Birch Avenue to the west and Blackbrook Avenue and Mill Lane to the east. Pedestrian access will be from footpath links from adjacent residential areas to the south, east and west as well as from new footpaths alongside the vehicular access ways. The associated highways work will form a main spine road through the development allowing access via secondary roads into the various phases of residential development.

Landscape Scheme

- 2.5.8 The proposed landscape scheme for the site includes the retention of existing features of amenity, ecological and character importance, landscape and ecological enhancement to the northern boundary against the M62 motorway with extensive planting, and the creation of amenity areas with the planting of native species of local provenance. Surface water retention ponds would be created within the northern buffer zones and would be designed and managed for wildlife. Both the outline landscape scheme and the master plan have been guided by baseline information gathered as part of the design process.
- 2.5.9 Fences and planting will form new boundaries to the site where required and the main spine road through the site will be in the form of a boulevard. External lighting will be kept to a minimum throughout the site with the exception of any lighting for sports.

Construction Phasing and Timescales

- 2.5.10 Before the commencement of any works on site, including preparation work, areas identified for exclusion will be marked out on site with access restricted.
- 2.5.11 In year one the construction of the new access points and roads, internal roads to phase 1 housing parcels, initial internal roads, associated drainage, acoustic fencing and screen planting would take place.

Subsequent Years

- 2.5.12 After this period the proposed new access roads would be extended into the site and it is anticipated that within 12-14 years, construction of the development of 1200 houses will be completed.

Phasing

- 2.5.13 It is envisaged that the site would be phased in a series of separate development parcels from each of the access points so as to achieve the organic growth of this residential neighbourhood.

Onsite Operations

- 2.5.14 The site compound required in year 1 will be located to take advantage of existing screening features on the site.
- 2.5.15 All operations on site would be undertaken in accordance with 'Best Practice' procedures and would be subject to control by other relevant legislation and normal environmental controls.
- 2.5.16 Works would be undertaken in accordance with mitigation recommended in the following chapters and with any statutory requirements.
- 2.5.17 It is envisaged that no specialist machinery or plant other than that required for normal engineering and construction works would be required to undertake the works onsite.

3.0 THE SITE IN CONTEXT

3.1 Introduction

- 3.1.1 The extent of the site boundary together with local context is shown on **Volume 3 Appendix APP 1**. An aerial photograph of the site forms **Volume 3 Appendix APP 2**.

3.2 Site Location and Adjacent Land uses

- 3.2.1 The proposed site is located in north Warrington at a distance of 1.2 kilometres from the town centre of Warrington. Other settlements are Newton Le Willows, at 5.0 kilometres to the North West, Padgate, at 2.5 kilometers to the South East, Birchwood at 4 kilometres East, Winwick at 0.75 kilometers to the North and Houghton Green (Mill lane) directly to the east.
- 3.2.2 The site lies to the south of the M62 Motorway, which runs the entire length of the northern boundary. It is the main route between Manchester to Liverpool with links to the M6 and M57. The northern boundary to the site is formed by a 1.4 metre high timber fence and a band of vegetation that forms a barrier to the M62 motorway. Part of the boundary runs in cutting to the north east adjacent to semi mature trees. Beyond the motorway lies farmland continuing northwards towards the A49 Winwick Link Road and the village of Winwick.
- 3.2.3 The eastern boundary of the site is made up of residential properties of Mill Lane (Old Road) and Lockerbie Close / Ballater Drive with a recreation ground linking through to Mill Lane, beyond which lies Houghton Green and the Warrington suburb of Cinnamon Brow. The majority of the north east boundary is formed by hedgerow vegetation and timber panel fences approximately 1.8 metres in height that forms the curtilage to modern residential properties.
- 3.2.4 The south to south eastern boundary is well vegetated with trees and scrub vegetation forming the edge of Radley Common, Radley Farm and Radley Plantation. This area includes an existing play area and Radley Common Community Centre. Beyond this and for the majority of the south to south western boundary to the site there exists the rear gardens of houses forming the residential suburb of Hulme, part of Warrington.
- 3.2.5 The residential properties of Hulme continue along the western boundary with the site surrounding the Fairhaven Young Peoples Unit at the Alders which is run by 5 Boroughs Partnership NHS Foundation Trust. West of Hulme is the A49 Winwick / Newton Road at Junction 9 of the M62 with Winwick Quay Industrial Estate beyond.
- 3.2.6 A single public right of way passes through the site from Mill Lane to the North East, along Peel Cottage Lane and crosses the motorway on an over-bridge.

3.3 Site Description

3.3.1 The site is generally open grassland and scrub vegetation with mature hedges and trees along field boundary drains. (**Volume 3 Appendix APP 5**) There is a small woodland coppice with further mature vegetation surrounding sports pitches towards the eastern boundary. A detailed assessment of the habitats and vegetation within the site is set out in section 6 of the ES.

3.3.2 The highest point of the site is to the east of Peel Hall at 20.57 metres A.O.D. From that point the land falls to the North West boundary at 17.4 metres A.O.D and to approximately 10 metres A.O.D along the Southern boundary. The general visual impression gained on site is that it is predominantly flat without major undulations.

3.3.3 Buildings on Site

Peel Cottage and Peel Hall are both located on Peel Cottage Lane which is located to the north west of the site. Peel Cottage and Peel Hall are not included in this application.

3.3.4 Vegetation

Detailed information in respect of vegetation, habitats and species found on the site is contained within Chapter 6.0 of this Volume.

3.3.5 Geology

The site lies within an area comprised of Triassic sandstones and mudstones.

3.4 Agricultural land Quality

3.4.1 The agricultural land classification of the site is assessed by DEFRA as Grade 2, 3a, 3b and 4. Soil quality on the site is indicated on **Appendix APP 7** and is based on Natural England's interactive 'Magic Map' data. The National Planning Policy Framework (NPPF) states that Local Planning Authorities should take into account the economic and other benefits of the best and most versatile agricultural land. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a high quality. In the Warrington area most of the agricultural land is of high quality. Current guidance therefore places the responsibility on the Local Planning Authorities but there is no policy dealing with Agricultural Land Quality in the Warrington Core Strategy 2014. It should be noted that the land no longer forms part of an agricultural holding and has not been actively farmed for over 20 years. It is also remote from any other farm holding and subject to urban pressures.

3.5 Flood risk assessment

A flood risk assessment is included in section 7 of this report prepared by Transport Planning Associates. The Environment Agency (EA) Indicative Flood map, confirms that the site is located in Flood Zone 1 and is not at risk of fluvial flooding. Areas located in Flood Zone 1 have less than 0.1% chance of flooding in any given year. Only a 1 in 1000 year flood event puts this site at risk from fluvial and tidal events.

4.0 DEVELOPMENT ALTERNATIVES

4.1 Introduction

- 4.1.1 This section describes the main alternatives that were assessed in the consideration of the scheme and development of the proposals.

4.2 Alternative Options

- 4.2.1 The following options have been considered as part of the Environmental Impact Assessment process:

Do nothing scenario

- 4.2.2 Under this option no development would take place on the site.
- 4.2.3 If the development of housing does not occur on the site the land would continue to be un-used as it does not form part of an agricultural holding. Housing needs in Warrington under this do nothing scenario would remain unmet. It is likely under this scenario that other areas located in the greenbelt would be subject to pressure for release for housing. Many of these areas are not as well placed as peel hall is for housing.

4.3 Alternative Layouts

- 4.3.1 As part of the design process the proposed layout has undergone various amendments in response to baseline information gathered. The proposed layout therefore would inherently minimise some of the potential impacts identified especially in respect of biodiversity, ecological features, visual amenity and landscape character.

4.4 Conclusion

- 4.4.1 The proposed site is an optimal location for housing.

5.0 PLANNING POLICY CONTEXT

5.1 Introduction

- 5.1.1 Primary legislation for England is the Planning and Compulsory Purchase Act 2004 and the Town and Country Planning Act 1990. Planning applications must be determined in accordance with the National Planning Policy Framework and the provisions of the relevant Development Plan unless material considerations indicate otherwise (Section 38(6) of the Planning and Compensation 2004 Act and section 70(2) of the Town and Country Planning Act 1990).
- 5.1.2 The process of Environmental Impact Assessment is governed by the Town and Country Planning (Environmental Impact Assessment) Regulations 2011, as updated in 2017

5.2 National Planning Guidance

5.2.1 Planning Policy

Current land use planning policy for England is contained within National Planning Policy Framework (February 2019). The policies contained therein provide a strategic framework for the preparation of development plans, which may be considered in the determination of individual planning applications as material consideration.

- 5.2.2 NPPF sets out the achievement of sustainable development are a central objective of the Government's aims and this has economic, social and environmental aspects (paras 7 & 8). The NPPF states (paragraph 11) that the development plan is the starting point for decision making and "*development proposals that accord with an up to date Development Plan*" should be approved without delay. Paragraph 2 confirms that "*NPPF is a material consideration in planning decisions*".
- 5.2.3 Paragraph 7 states that, "*the purpose of the planning system is to contribute to the achievement of sustainable development*" and para 11 states that,

For decision taking this means:

- c) approving development proposals that accord with the Development Plan without delay; or*
- d) where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless;*
- i. the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed; or*

- ii. *any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole.*

5.2.4 Paragraph 59 relates to housing development and requires the planning process “to support the Government’s objective of significantly boosting the supply of housing” and Para 67 requires Local Authorities to maintain “specific deliverable sites” for a 5 year period as a minimum.

5.2.5 Further, and with specific reference to Warrington (which does not have a minimum 5 year plus buffer supply of housing land) the footnote to para 11(d) confirms in relation to the requirement for local authorities to maintain a 5 year (plus buffer) supply of housing sites that, relevant policies for the supply of housing should not be considered up to date if the local planning authority cannot demonstrate a 5 year supply of deliverable housing sites.

5.2.6 Guidance regarding landscape designations is set out at paragraph 172 and this refers to national designations which states that,

“Great weight should be given to conserving landscape and scenic beauty in the National Parks, The Broads and Areas of Outstanding Natural Beauty which have the higher status of protection in relation to landscape and scenic beauty”.

5.2.7 Further, paragraph 172 also states,

“Planning permission should be refused for major developments in these designated areas”.

There are no national or local designations in the context of this proposal.

5.2.8 Local Planning Policies

The Development Plan for Warrington comprises the Core Strategy adopted in July 2014. The housing requirement and allocation policies of this plan have been quashed by a ruling of the High Court in February 2015.

5.3 The Local Plan Core Strategy July 2014

Designations

5.3.1 The site is not within any area which is nationally or locally designated because of its historical, architectural or archaeological interest as set out in NPPF. The site is not afforded any international, national or local designations in respect of nature conservation or geological importance. The site is not proposed or notated for any use in the current Development Plan. The application site does not lie within a designated Green Belt, Green Wedge, Area of Separation or other open land designation in the Development Plan.

- 5.3.2 It is important to consider potential indirect impacts that may arise due to proposed developments. Within the vicinity of the site there are no European, National, or locally designated sites that can be effected by the scheme.

Housing Supply

- 5.3.3 There are 2 issues relevant to the supply of housing in Warrington Borough. Firstly, as a direct result of the high court quashing the part of the plan relating to housing requirements there is no housing requirement or target for Warrington against which supply can be measured. As such, there is not able to be a 5 year supply of housing land within Warrington Borough. Secondly, as set out in the 2020 monitoring documents published by Warrington Borough Council, there is less than a 5 year supply set against OAN for the Borough.
- 5.3.4 In the light of this shortfall the advice in paragraph 11(d) that relevant policies for the supply of housing should not be considered up to date applies.
- 5.3.5 Furthermore since the site is agreed to be regarded as a sustainable location, the housing element of this scheme should be considered in the context of the presumption in favour of sustainable development (paragraph 11 of NPPF).

5.4 Sustainability

- 5.4.1 The site and the development is able to be regarded as sustainable. There is a policy presumption in favour of the approval of substantial development set out in NPPF (paragraph 11).
- 5.4.2 The site is in close proximity to and is within walking distances of local transportation routes, including buses and cycle routes, shopping and other everyday facilities, recreational areas. The proposals include the provision of a primary school and employment uses, and a local centre is proposed in the early phases of this development to increase opportunities to shop and seek local facilities within walking distance.
- 5.4.3 The application proposals create no unacceptable environmental harm or concerns.
- 5.4.4 The application for development will bring employment opportunities and large scale investment to an area needing such employment creation and investment.
- 5.4.5 Thus, the three requirements of sustainable development are met by the scheme.

5.5 Conclusion

- 5.5.1 Overall the proposed development complies with relevant national and development plan policy. It aids the fulfillment of objectives and strategies within non-statutory assessments and publications (such as the provision of market and affordable housing, local employment and creating investment).

6.0 ECOLOGY AND NATURE CONSERVATION

6.1 INTRODUCTION

- 6.1.1 Section 6.1 of this Addendum serves as an update to the original Environmental Statement and Addendum 1; it therefore entirely replaces Section 6.1 of the submitted Environmental Statement and Addendum 1. Methodologies are presented separately as Section 6.2.
- 6.1.2 This chapter of the ES deals with ecological and nature conservation issues in relation to the proposed development. It considers both direct and indirect ecological effects and mitigation. The 2019 surveys act as a comprehensive update to all ecology work previously undertaken at the site between 2012 and 2017, detailed within the Environmental Statement (July 2016) and Addendum 1 (January, 2018).
- 6.1.3 The basic objective of the 2019 survey work was to obtain up to date information on habitats and/or species that may be affected by the development of the site. To achieve this objective the survey effort identified the following:
- The presence of any statutory wildlife sites
 - The presence of any non-statutory wildlife sites
 - The presence/potential presence of species or habitats with statutory protection
 - The presence/potential presence of species or habitats with non-statutory protection
 - The presence/potential presence of species or habitats that require special consideration during the development.
- 6.1.4 The 2013, 2016 & 2017 survey work was re-evaluated to identify where surveys needed to be updated or repeated. The following requirements were established:
- Phase 1 Habitat Survey - updated evaluation required.
 - Breeding Bird Survey - updated evaluation required.
 - Water Vole Survey - updated evaluation required.
 - Great Crested Newt Survey - updated evaluation required.
 - Badger Survey - updated evaluation required.
 - Hedgerows Regulations Assessment - updated evaluation required.
 - Bat Activity Survey - updated evaluation required.
 - Barn Owl Survey - updated evaluation required.
- 6.1.5 The extent of the survey area has been amended since previous survey work to include properties along Poplar Avenue. Consequently, in addition to the updated surveys listed above, a Preliminary Bat Roost Assessment of Buildings and Trees was undertaken along with subsequent Bat Roost Emergence surveys. This work included an updated assessment of all trees within the site area in relation to potential roosting value for bats.

- 6.1.6 Lorraine McKee MSc GradCIEEM, Project Ecologist at Appletons acted as lead surveyor for the 2019 habitat, hedgerow and bat survey work at the site. Paula Bateson MSc ACIEEM, Senior Ecologist acted as lead surveyor for badger, water vole and barn owl survey work. The breeding bird survey was undertaken by an experienced ornithologist, familiar with the site from previous bird survey work: Ian Ryding, Consultant Ecologist for Pennine Ecological. The great crested newt survey undertaken as part of this study was undertaken by an experienced ecologist familiar with the site from previous GCN survey work: Robert Leatham, Consultant Ecologist for Pennine Ecological.
- 6.1.7 The current ES Chapter has been compiled by Paula Bateson MSc ACIEEM, Senior Ecologist at Appletons, with Ian Ryding, Consultant Ecologist for Pennine Ecological, contributing text relating to breeding birds.

Accompanying technical information

- 6.1.8 An overall Phase 1 Habitat Map is supplied as **Appendix ECO 1**, selected raw desk study data is provided as **Appendix ECO 2**.
- 6.1.9 The current chapter of the ES provides an overview of survey findings, conclusions and any recommended mitigation relative to potential impact of proposals. Detailed mitigation strategies are appended to the current report as **Appendices ECO 3, ECO 4, ECO 5 and ECO 6**.
- 6.1.10 Other documents referenced within the current Chapter include a Site Concerns Map, provided as **Appendix ECO 7** and an overview of relevant wildlife legislation, **Appendix ECO 8**.
- 6.1.11 The current chapter of the ES includes an overview of survey methodologies (Section 6.2) and findings (Sections 6.4 and 6.5) of the 2019 survey work. For further technical detail in relation to specific survey methodologies, survey personnel, dates and raw results data, a suite of annex reports has been prepared to accompany this Chapter, supplied as separate technical appendices. These appendices also include comparisons with previous survey results where relevant. Accompanying technical appendices are as follows:
- **ECO 9:** 2019 Phase 1 Habitat Survey
 - **ECO 10:** 2019 Roosting Bat Surveys
 - **ECO 11:** 2019 Foraging Bat Surveys
 - **ECO 12:** 2019 Breeding Bird Survey
 - **ECO 13:** 2017 Barn Owl Habitat Suitability Assessment
 - **ECO 14:** 2019 Water Vole Survey
 - **ECO 15:** 2019 Great Crested Newt Survey
 - **ECO 16:** 2019 Badger Survey
 - **ECO 17:** 2019 Hedgerows Regulations Assessment

Site Location and Description

6.1.12 The site area measures approximately 68ha and is centred at Ordnance Survey Grid Reference SJ 61601 91689 within the northern limits of Warrington (see **Figure 6.1**). The site is bound by the M62 motorway to the north and residential development to the east, west and parts of the southern boundary. Mill Lane abuts to the east, Poplars Avenue to the south, and Birch Avenue and Elm Road to the west. Radley Plantation and Radley Common are located immediately adjacent to southern parts of the site.

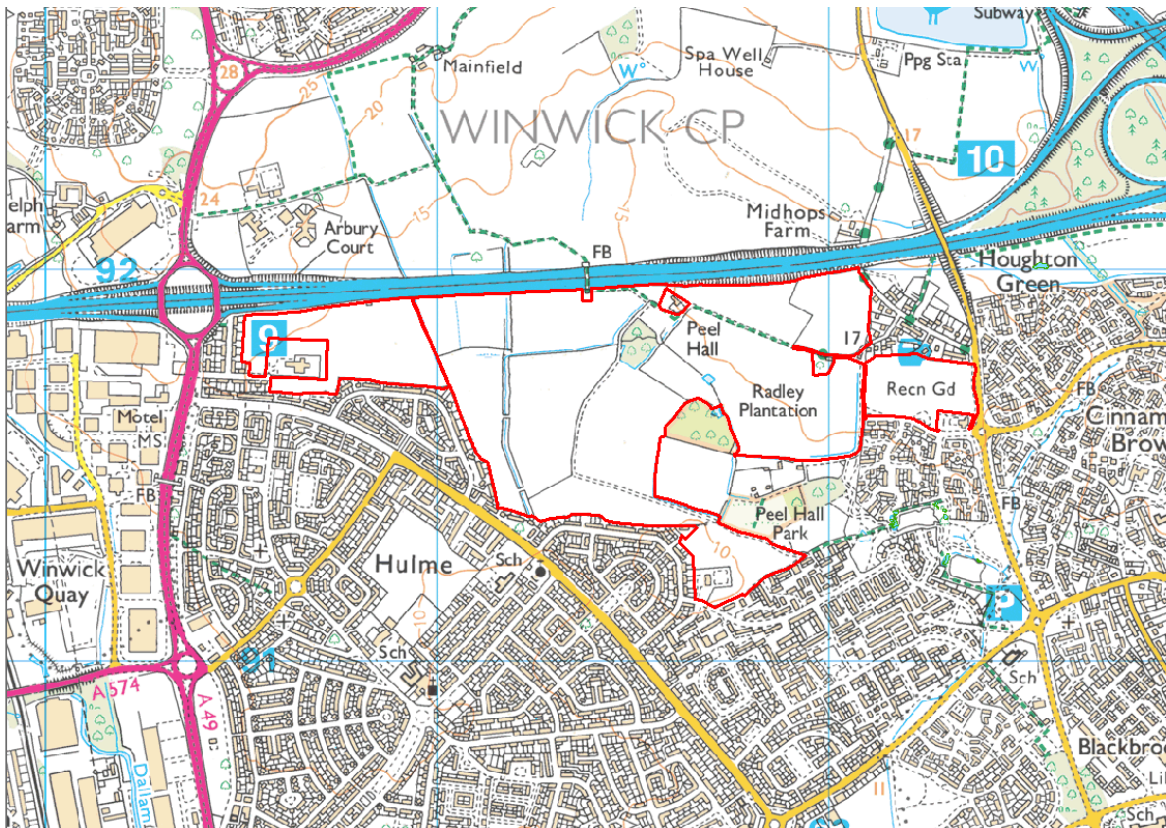


Figure 6.1: Site area, location and context in landscape (Ordnance Survey, 2019)

- 6.1.13 The wider landscape is dominated by residential and industrial developments of Warrington to the south and arable farmland to the north of the M62 motorway.
- 6.1.14 The application site itself comprises a series of large former arable fields sub-divided by ditches and defunct fragmented hedgerows. The open fields have been historically ploughed and left to grow rank and are now characterised by complex mosaics of coarse grassland, tall ruderal herb, dry stands of common reed and regenerating scrub of varying densities. It is understood the fields have not been managed as arable land since at least 1990, although it is understood vegetation has occasionally been managed by cutting and/or spraying. Other habitats on site include three ponds and substantial linear stands of immature broad-leaved woodland to the southern site boundary. To the east and south of the main site area, two recreational fields characterised by regularly mown amenity grassland with boundary habitats of trees, woodland and hedgerow are also included within the application site boundary.

- 6.1.15 Seven residential properties along Poplars Avenue are newly included within the application site boundary, at two locations along the south-western site boundary.
- 6.1.16 In comparison to previous surveys, the main site area has continued along the trajectory of seral succession from grassland through to scrub.

Summary of site proposals

- 6.1.17 Satnam Millennium Ltd propose to develop the land at Peel Hall, Warrington. The proposed new residential neighbourhood would include up to 1200 houses, a neighbourhood centre, school, recreational playing fields, public open space and ecological enhancement areas. A main non through link road with bus gate will pass east-west through the site connecting Mill Lane and the east of the site to Poplars Avenue at the west.
- 6.1.18 A Parameters Plan is attached to this report as **Appendix APP 6** which demonstrates the conceptual layout of proposals in terms of key proposed land-use types. Based on the results of previous and updated ecology survey work at the site, various linear buffer zones of habitat creation have been included on the parameters plan including either side of Spa Brook, along ditches and hedgerows as well as adjacent to Radley Woods Plantation. A wide (~50metre) belt of habitat creation is also proposed along the northern site boundary.

6.2 METHODOLOGIES AND CONSTRAINTS

- 6.2.1 Section 6.2 of this Addendum serves as an update to the original Environmental Statement and Addendum 1; it therefore entirely replaces the corresponding Section of the submitted Environmental Statement and Addendum 1.
- 6.2.2 This section provides a summary of survey methodologies for each ecology survey undertaken on site, which largely conform with those described by the original ES and Addendum 1, aside from additional survey work for bats and great crested newt, along with a finer grain of detail in relation to habitat data collection.

Scope of Assessment

- 6.2.3 The surveys and assessment aim to inform the likely impact of the proposed development on:
- Designated statutory and non-statutory nature conservation sites within 2km of the development;
 - Species and habitats protected by European or/and UK legislation;
 - Habitats and species of principle importance for the conservation of biodiversity in England (Section 41 of NERC Act, 2006); and,
 - Habitats and species listed is priority species on the Local Biodiversity Action Plan.

Desk study

- 6.2.4 An updated desk top study was undertaken in December 2019, to determine the presence of any designated nature conservation sites and records of protected/notable habitats and species within a 2km radius of the site. The desk study search included the following consultees and resources:
- rECOrd, the local biological record centre for the Cheshire region, to determine the presence of any designated nature conservation sites and records of protected/notable species;
 - 'MAGIC' (Multi Agency Geographical Information for the Countryside), to search locations of statutory nature conservation sites, as well as potential priority habitat types, ancient woodland and EPSM (European Protected Species Mitigation) licences;
 - Ordnance Survey (OS) maps and aerial imagery (Google Earth), to help determine the extent of habitats occurring on and close to the site and habitat connectivity to the wider landscape; historical map and aerial data was also consulted using Google Earth to inform an understanding of former site use, in combination with previous survey reports;
 - Natural England website to review the National Character Area profile for the Mersey Valley (<http://publications.naturalengland.org.uk/file/5757459629080576>); and,
 - The Woodland Trust Ancient Tree Inventory (<https://ati.woodlandtrust.org.uk/>) to search for any potential ancient, veteran or notable tree specimens within the local area.
- 6.2.5 The Warrington Borough Council Planning Portal was also consulted for nearby planning applications in order to assess potential cumulative impacts. Any associated ecological reports were reviewed for potentially relevant data.
- 6.2.6 The data collected from these consultees is discussed in Section 6.3. Selected raw data are provided as **Appendix ECO 2**. In compliance with the terms and conditions relating to its commercial use, full desk study data is not provided within this report.

Habitat Surveys

- 6.2.7 A Phase 1 Habitat Survey and Hedgerows Regulations Assessment were undertaken at the site.

Phase 1 Habitat Survey

- 6.2.8 The Phase 1 Habitat Survey is a standard technique for classifying and mapping British habitats. The aim is to provide a record of habitats that are present on site.
- 6.2.9 The Phase 1 Habitat Survey was conducted following the methodology of the Joint Nature Conservation Committee (JNCC, 2010) and the Institute of Environmental Assessment (IEA, 1995) and was carried out across various dates between May and October 2019 by Lorraine McKee MSc GradCIEEM, Project Ecologist.
- 6.2.10 Chapter 6.4 of the current report provides broad descriptions of each habitat type with references to representative and notable species only, and an overall Phase 1 Habitat Survey map is

provided as **Appendix ECO 1**, which illustrates the location and extent of all habitat types recorded within the site area.

- 6.2.11 Species lists with DAFOR abundance scores were collected for individual habitat areas where appropriate, which are provided with detailed habitat descriptions and Target Notes as **Appendix ECO 9**. **Appendix ECO 9** also includes further detail on survey methodologies along with compartmentalised Phase 1 Habitat Maps with Target Notes.
- 6.2.12 Whilst every effort has been made to identify and map any invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act (1981, as amended), it should be noted that this was not a specific survey for these species. A Site Concerns map is provided as **Appendix ECO 7**, which was produced for purposes separate to ecology, but is of relevance in demonstrating the approximate location and extent of invasive flora as well as other areas of anthropogenically caused habitat degradation.

Hedgerow Regulations Assessment

- 6.2.13 All hedgerows, excluding those defining the boundaries of adjacent domestic properties were assessed in relation to the ecology and landscape criteria that defines an 'important hedgerow' in accordance with The Hedgerow Regulations Act (1997). This survey was undertaken in March 2019 by Lorraine McKee MSc GradCIEEM, Project Ecologist. Results are summarised in Section 6.4 of the current chapter whilst detailed methodologies and results are provided as **Appendix ECO 17**.

Protected Species Surveys

- 6.2.14 Phase 2 surveys were undertaken in respect of roosting and foraging bats, water vole *Arvicola amphibius*, breeding birds, barn owl *Tyto alba*, badger *Meles meles*, great crested newt *Triturus cristatus*, as set out as **Table 6.1**, overleaf. Further detail on survey methodologies, including survey dates, survey personnel and weather conditions is provided in **Appendices ECO 9 to 16**.

Survey constraints

- 6.2.15 No limitations were experienced during the hedgerow or breeding bird surveys. The remainder of surveys were subject to constraints, ranging from minor to major, outlined below.

Phase 1 Habitat Survey

- 6.2.16 The survey was undertaken across numerous site visits between May and October 2019, covering the peak survey season for botanical assessment. However botanical assessments of site areas of such a large scale are accompanied with an inherent risk that certain species may not be apparent within areas of the site surveyed, dependent on the time of year that separate areas area surveyed. Considering the generally homogenous character of site habitats however, this was a minor constraint and not considered significant in the context of overall survey conclusions.

Table 6.1: Summary of protected species survey methodologies

Faunal group	Survey methodology	Date of 2019 surveys	Guidance
		Date of any previous surveys	
Roosting bats	Daytime assessments of all buildings and trees for potential bat roosting features, followed by dusk emergence bat surveys.	April – July 2019 No previous survey undertaken	Collins, J. (ed.) (2016) <i>Bat Surveys for Professional Ecologists: Good Practice Guidelines</i> , 3 rd edition. The Bat Conservation Trust, London.
Foraging and commuting bats	Monthly dusk manual transect surveys throughout the bat activity season & one dawn transect survey. Transect routes walked by surveyors with regular data collection stop points. Surveys lasted approximately 2 hours.	April - Sept 2019 July - Sept 2015 July - Sept 2016*	Collins, J. (ed.) (2016) <i>Bat Surveys for Professional Ecologists: Good Practice Guidelines</i> , 3 rd edition. The Bat Conservation Trust, London. Bat Conservation Trust (no date) <i>National Bat Monitoring Programme</i> . The Bat Conservation Trust, London.
Breeding birds	Two morning visits during which all bird activity was recorded from walked transect routes and listening points. Criteria to determine whether birds were breeding or not follows 'The New Atlas of Breeding Birds in Britain and Ireland: 1988-1991.'	April - May 2019 June - July 2013 June - July 2017	British Trust for Ornithology (1983) <i>Common Bird Census Instructions</i> . BTO, Norfolk. British Trust for Ornithology (2018) <i>BTO/JNCC/RSPB Breeding Bird Survey Instructions</i> . BTO, Norfolk.
Barn owl	Review of all site survey field notes for recordings of barn owl and habitat and suitability assessment.	April - Sept 2019 Sept 2015	Barn Owl Trust (2012). <i>Barn Owl Conservation Handbook</i> . Pelagic Publishing. Exeter Shawyer, C. R. (2011). <i>Barn Owl Tyto alba Survey Methodology and Techniques for use in Ecological Assessment: Developing Best Practice in Survey and Reporting</i> . IEEM, Winchester.
Water vole	A search of watercourses / waterbodies on and within 200m of the site for any signs of water vole presence, such as burrows, droppings, latrine sites, feeding stations, footprints and runs.	April 2019 August 2013 August 2015	Dean, M., Strachen, R., Gow, D. and Andrews, R. (2016) <i>The Water Vole Mitigation Handbook (The mammal society mitigation guidance series)</i> Eds Fiona Matthews and Paul Chanin. The Mammal Society, London.
Great crested newt	All potential aquatic habitat for breeding great crested newts within 250m of the proposed development footprint was subject to an initial Habitat Suitability Assessment and between four and six subsequent survey visits between May and June. Survey methodologies on each visit included torchlight search, bottle trapping, egg search and refuge search. 2019 surveys included GCN environmental DNA (eDNA) analysis	April - June 2019 May - June 2012	Biggs, J., Ewald, N., Valentinim A., Gaboriaud, C., Griffiths, R.A., Foster, J., Wilkinson, J., Arnett, A., Williams, P. and Dunn, F. (2014). <i>Analytical and methodological development for improved surveillance of the Great Crested Newt</i> . Defra Project WC1067. Freshwater Habitats Trust: Oxford. Oldham R. S., Keeble, J., Swan, M. J. S. and Jeffcote, M. (2000). 'Evaluating the suitability of habitat for the Great Crested Newt (<i>Triturus cristatus</i>)'. <i>Herpetological Journal</i> 10 (4), 143-155. English Nature. (2001). <i>Great Crested Newt Mitigation Guidelines</i> . English Nature, Peterborough.
Badger	A comprehensive search for badger field signs within suitable habitats on and within 50 metres of the site boundary. (i.e. pawprints, sett entrances, pathways, hairs, snuffle holes and latrine sites)	March 2019 August 2013 August 2015	Harris, S. Cresswell, P. and Jefferies, D. (1989) <i>Surveying Badgers</i> . The Mammal Society Publication No. 9.
*: survey of southern amenity playing field only			

Badger

- 6.2.17 Occasional areas of the site could not be fully inspected for evidence of badger at the time of the survey due to the presence of impenetrable scrub. Key areas of constrained access are highlighted on the associated survey plan. Any mammal trails into dense scrub were followed and no evidence of badger was recorded, indicating a lack of use by badger. Owing to the time of year (March) and low vegetation cover, this constraint was minor in comparison to Moderate-Minor by the August 2013 and 2015 surveys, and was not considered likely to influence the overall survey conclusions.

Water vole

- 6.2.18 Occasional stretches of ditches and watercourses could not be fully inspected for evidence of water vole at the time of the April survey due to the presence of impenetrable scrub. Dense stands of common reed also impaired visual inspections of banks. Key areas of dense scrub and reed are highlighted on the associated survey results plan. Owing to the time of year of the April survey visit and low vegetation cover, this constraint was Moderate, in comparison to August 2013 and 2015 surveys, which experienced Major constraints.
- 6.2.19 Water vole evidence and activity can vary along a watercourse between Spring and Summer, and thus a second summer survey visit is recommended by guidance (Dean et al., 2016). This second survey was subject to Major constraints owing to continuous impenetrable scrub and reed within and adjacent to ditch features and was concluded as not physically possible. Constraints are taken into account within all conclusions, discussions and impact assessments in relation to water vole.

Great crested newt (GCN)

- 6.2.20 Guidance recommends at least half of all GCN survey visits should be undertaken between mid-April and mid-May to record peak numbers of GCN (English Nature, 2001). In this instance, all surveys were undertaken between mid-May and mid-June; however due to the cold weather in April 2019 (only six nights with an overnight low of above 5°C) the timing of survey is considered acceptable. Natural England have accepted mid-May to mid-June survey data in the past under similar circumstances and this was not considered a significant constraint to overall survey conclusions.

Roosting Bats

- 6.2.21 Of the seven buildings within the site area, one residence (No. 346, Poplars Avenue) could not be accessed to undertake an internal or external bat roost inspection, or dusk/dawn bat activity surveys. The house was viewed from the street and considered likely to be of the same build and condition as all other houses surveyed. In addition, the property was incidentally observed during dusk emergence surveys of adjacent buildings. However, without direct access the potential value of the property for roosting bats could not be comprehensively assessed and the presence or likely absence of roosting bats could not be categorically concluded.

- 6.2.22 Property No.s 350, 456 and 466 Poplars Avenue are all directly connected to properties within the site area, and as such could be indirectly impacted upon by proposals owing to proximity. Similar to above, these properties could not be accessed and were only partially covered by dusk emergence surveys of the neighbouring buildings.
- 6.2.23 Some outbuildings and garages could not be entered due to health and safety concerns, such as structural safety or the presence of asbestos.
- 6.2.24 The inspection of trees on site for potential roosting features was minorly constrained due to the presence of foliage throughout the summer months. This was considered to be a minor constraint due to a general lack of maturity in the tree species present on site.
- 6.2.25 All above constraints are taken into account within all conclusions, discussions and impact assessments in relation to roosting bats.

Foraging Bats

- 6.2.26 Bat Conservation Trust guidance (Collins, 2016) recommends that monthly automated surveys are undertaken in conjunction with transect surveys for sites with moderate potential value for foraging/commuting bats. Static bat detectors were not deployed in this instance due to the high risk of equipment theft or vandalism.
- 6.2.27 Transect routes were started from the same vantage and stop points each visit and walked in the same directions each visit. This approach was undertaken for the purpose of accurately comparing data between months, however it is acknowledged that this approach comes with the inherent risk that areas of bat activity at certain locations and times could be missed, especially given the large size of the site.
- 6.2.28 All but one of the transect routes were modified for the August and September survey visits, due to impenetrable vegetation and unsafe conditions underfoot. Transects aimed to cover as many original stop points and linear features as possible.
- 6.2.29 Woodland habitats were not entered into by any of the transect routes owing to safety hazards (e.g. giant hogweed, fly tipping, asbestos and evidence of drug use). Woodland edge habitats were fully surveyed.
- 6.2.30 Each occurrence of a bat (heard or seen) was treated as one record or “contact” in the context of data analysis. This may result in the over-representation of species with short wavelength echolocation, and underrepresentation of bat species with long wavelength echolocation. For example, one pipistrelle bat foraging along the length of a hedgerow may be recorded as several

separate bat passes, whereas continuous noctule activity may only be recorded as one contact if the bat does not go out of range. Qualitative data collected provides context to these instances.

- 6.2.31 All of the above constraints are taken into account within conclusions, discussions and impact assessments in relation to foraging and commuting bats.

Determining importance of site features

- 6.2.32 The ecological value, or potential value, of site features is determined within a defined geographical context. The geographic frame of reference used to determine the predicted value of the ecological receptors is as follows:

- International
- National (England)
- County (Cheshire)
- District (Unitary Authority or Borough)
- Local (Parish)
- Site (Within confines of site)

- 6.2.33 The value of habitats and species assemblages had been measured against published selection criteria which include the following:

- Guidelines for the selection of biological SSSIs
- UK Biodiversity Action Plans and Section 41 Species and Habitats of principal importance in England (NERC Act, 2006).
- Local Wildlife Site Criterion for the Cheshire Region
- Cheshire Biodiversity Action Plan
- Relevant Red Data List/Book species and Nationally Scarce species not covered by the above, or any other lists / schedules of species rarity or importance.

- 6.2.34 The legislative requirements of key species and habitats are also considered in this assessment including:

- Wildlife and Countryside Act 1981 (as amended)
- Conservation of Habitat and Species Regulations 2017
- Protection of Badgers Act 1992

- 6.2.35 An overview of relevant wildlife legislation and policy is provided as **Appendix ECO 8**.

- 6.2.36 Habitats and species were also evaluated with reference to standard nature conservation criteria as described by Ratcliffe (1977) and the Nature Conservancy Council (1989), including diversity; naturalness; rarity; fragility and position in an ecological unit.

6.2.37 The site was also assessed in terms of 'functionality', in relation to nearby nature conservation sites. Functional habitat is the term given to an undesignated area lying beyond the boundary of a protected site, which is nevertheless used by designated species populations. When an essential ecological function, such as foraging, occurs beyond a site boundary, then the area within which this occurs is termed *functionally linked land*, or is known as *functional habitat*.

Determining significance of impacts

6.2.38 Impacts are assessed based on Landscape Parameters Plan (**Appendix APP 6**). The following characteristics of impact will be considered:

- Positive or negative
- Extent
- Magnitude
- Duration
- Timing
- Frequency
- Reversibility

6.2.39 The significance of effects will be qualified with reference to an appropriate geographic scale. For example, impacts upon the national populations of species of importance at a nationally designated nature conservation site, or impacts to local populations of species within a locally designated nature conservation site.

6.2.40 The likely impact of the proposed site works, in the absence of mitigation, is evaluated against the criteria laid out in **Table 6.2** below which is based on NATA (New Approach to Appraisal) as described by Byron, 2000.

6.2.41 Impacts will be considered for each development phase i.e. site clearance and development (construction impacts), and post-development (operational impacts)

Table 6.2: Impact Assessment Table

Impact magnitude	Nature conservation importance				
	<i>Site</i>	<i>Local</i>	<i>District / County</i>	<i>National</i>	<i>European</i>
Beneficial	Non significant	Non significant	Non significant	Non significant	Non significant
Nil effect	Non significant	Non significant	Non significant	Non significant	Non significant
Minor (short term/ reversible)	Non significant	Non significant	Slight	Moderate	Moderate
Moderate (deterioration of feature)	Non significant	Slight	Moderate	Severe	Severe
High (loss of feature)	Non significant	Slight	Moderate	Severe	Severe

6.3 DESK STUDY RESULTS

- 6.3.1 Section 6.3 of this Chapter serves as an update to the original Environmental Statement and Addendum 1; therefore it replaces the corresponding section of the original ES. Refer to original ES and Addendum 1 for August 2015 and August 2017 Desk Study Results (6.2.1 – 6.2.3).

Statutory Nature Conservation Sites

- 6.3.2 No statutory nature conservation sites are present within the application site.
- 6.3.3 Reference to the Natural England MAGIC website indicates that no statutory nature conservation sites are present within a 2km radius of the site.
- 6.3.4 The site area is located across three Site of Special Scientific Interest (SSSI) Impact Risk Zones (IRZs). SSSI IRZs are utilised by Local Planning Authorities to assess planning applications for likely impacts on SSSIs. The Impact Risk Zones within which the site is located do not stipulate that any further consultation or assessment is required for residential planning applications.

Non-Statutory Nature Conservation Sites

- 6.3.5 The data provided by the local biological records centre indicates that five non-statutory nature conservation sites (Local Wildlife Sites) occur within a 2km radius of the site, summarised in **Table 6.3** overleaf. **Table 6.3** also summarises the connectivity between each Local Wildlife Site and the proposal site. Sites are listed in order of proximity to the scheme (closest site first). Owing to its proximity to the site, the map and citation for Radley Plantation and Pond Local Wildlife Site is included within **Appendix ECO 2**.

Table 6.3: Local Wildlife Sites within 2km of the application site

Local Wildlife Site	Proximity to site	Key ecological features (as extracted from rECOrd citations)	Connectivity Assessment
Radley Plantation and Pond	Directly abuts the application site	<p>A mixed broadleaf plantation with a reasonably good structure although not conforming to any NVC community. Large, mature sycamore, pedunculate oak and ash form the main canopy with frequent mature wild cherry. There is evidence of ash regeneration and much under-planting.</p> <p>Hazel, hawthorn, rowan and field maple form the understorey. The ground flora of the plantation is typically impoverished. There is a pond of moderate to good quality in the north east corner which is becoming surrounded by scrub and Himalayan balsam. A locally rare species of crane fly (<i>Prionocera subsericornis</i>) has been recorded by the pond.</p> <p>Criteria for selection: Ponds and ditches & accessible natural green space</p>	<p>Excellent connectivity:</p> <p>Radley Plantation and Pond abuts the site with no barrier or hinderance to species wishing to move between the LWS and the proposal site. One of the LWS ponds lies on the boundary of the LWS and the proposal site.</p>
Houghton Green Pool	600m north	<p>A field excavated in the 1960s which now attracts significant and increasing numbers of wildfowl and waders.</p> <p>Species present include: coot, pochard, tufted duck, little grebe, great crested grebe, golden plover, wigeon, gadwall, mallard, pintail, garganey, shoveler, ringed plover, ruddy duck, lapwing, dunlin, snipe, redshank, common sandpiper, lesser yellowlegs. various gull species and passerines.</p>	<p>Poor connectivity:</p> <p>LWS situated beyond the M62 motorway from the application site. Low flying bird species have limited connectivity across the M62 owing to collision risk and air turbulence caused by the movement of vehicles.</p> <p>Higher flying bird species may move between and application site & LWS.</p> <p>No known hydrological connections exist between the proposal site and this LWS.</p>
Winwick Old Quay	850m south-west	<p>Winwick old quay has large areas of rank grassland which are succeding to tall ruderal vegetation and scrub. Other parts of the site are closely mown and there are blocks of species poor plantation woodland.</p> <p>There are several patches of species rich grassland which have probably been sown with species such as birdsfoot trefoils, cowslip, selfheal, yarrow, meadow vetchling, toadflax, wild carrot, ladies bedstraw, field scabious and the scarce grass vetchling. These areas are particularly important for terrestrial invertebrates.</p> <p>A number of old ponds are overgrown with typha (common reedmace) and Himalayan balsam dominates the surrounding areas. One pond has large areas of the non-native invasive <i>Crassula helmsii</i>. Stanner's pool is a well-managed fishing pool and has a good variety of wetland vegetation, albeit probably introduced. The non-native invasive waterweed <i>Elodea</i> is present in Stanner's pool.</p>	<p>Exceptionally poor connectivity:</p> <p>The LWS is situated a significant distance from the proposal site beyond residential areas, a large industrial estate and the A49.</p> <p>Citation implies key ecological features of LWS are plants and habitats as opposed to mobile or migratory terrestrial species.</p> <p>No known hydrological connections exist between the proposal site and this LWS.</p>
Sankey Brook	995m south-west	<p>Sankey brook wildlife corridor provides a physical link between three wildlife sites, Bewsey LNR, Gemini Washlands and Winwick quay. Although the stream itself is</p>	<p>Exceptionally poor connectivity:</p>

		of low wildlife value, its position in the landscape is crucially important as it provides a mechanism for species dispersal between the three sites as well as to the wider countryside to the north. The brook supports several wetland bird species including kingfisher, heron and moorhen.	<p>The LWS is situated a significant distance from the proposal site beyond residential areas, a large industrial estate and the A49.</p> <p>No known hydrological connections exist between the proposal site and this LWS.</p>
Gemini Washlands	1.3km west	<p>The site description for the washlands is incomplete and provides a species list as follows:</p> <p>Couch grass <i>Agropyron repens</i>, Common bent grass <i>Agrostis repens</i>, Wild angelica <i>Angelica sylvestris</i>, Rosebay willow herb <i>Chamerion angustifolium</i>, Tufted hair grass <i>Deschampsia cespitosa</i>, Yorkshire fog <i>Holcus lanatus</i>, Soft rush <i>Juncus effusus</i>, Reed Canary grass <i>Phalaris arundinacea</i>, Stinging nettle <i>Urtica dioica</i>, Reed bunting <i>Emberiza schoeniclus</i>, Sedge warbler <i>Acrocephalus schoenobaenus</i>, Snipe <i>Gallinago gallinago</i>.</p>	<p>Exceptionally poor connectivity:</p> <p>The LWS is situated a significant distance from the proposal site beyond residential areas, a large industrial estate and the A49.</p> <p>Citation implies key ecological features of LWS are plants and habitats as opposed to mobile or migratory terrestrial species.</p> <p>No known hydrological connections exist between the proposal site and this LWS.</p>

Habitats

6.3.6 A review of Priority Habitat types undertaken using MAGIC.gov website identified the following habitats recorded as present within the application site:

- Priority Habitat Inventory: Deciduous Woodland (Low confidence in classification*, >50% invasive species, 1.82ha and 0.73ha)
- Priority Habitat Inventory: Traditional Orchards (England) (Low confidence in classification*, >50% invasive species, 0.35ha).

*: "Low confidence" records imply that no survey to verify priority status has occurred within the last ten years to the knowledge of Natural England/Defra.

6.3.7 MAGIC.gov website implies that no areas of ancient woodland are located within at least 100m of the site.

6.3.8 No ancient, veteran or notable trees are highlighted as present on or adjacent to the site area by The Woodland Trust Ancient Tree Inventory.

6.3.9 Ordnance Survey data suggests the presence of two ponds within the application site, one pond immediately adjacent to the site within Radley Plantation and six ponds within 250 metres of the site to the south-east.

6.3.10 Ordnance Survey data suggests the presence of one watercourse within the site boundary, Spa Brook. This is a narrow, straightened watercourse which is culverted at the northern and southern site boundaries. Spa Brook is aligned north-south and bisects the site with an on-site length of approximately 575m. United Utilities data suggests that Spa Brook drains into Mill Brook behind the Alban Retail Park (ES, 2016). Ordnance Survey data also suggests the presence of ditches on site. Drainage reports state that one of these ditches drains into Dallam Brook via a large culvert (ES, 2016).

6.3.11 The nearest offsite watercourse to the development is Cinnamon Brook, approximately 125m to the east of the site. This watercourse is culverted beneath the M62 and possesses no connectivity with the watercourses on site.

Natural Character Area

6.3.12 Natural England's Natural Character Area (NCA) for the area is NCS 60: Mersey Valley (NE492). This area "consists of a wide, low-lying river valley landscape focusing on the River Mersey, its estuary, associated tributaries and waterways... The area encompasses a complex mix of extensive industrial development and urban areas, with high-quality farmland in between. Farmland in the north of the Mersey Valley NCA is predominantly arable, while in the south there is a mix of arable and pasture. Field pattern is regular and large scale, often defined by degraded hedgerows with isolated hedgerow trees" (Natural England, 2013).

Species

Local records - Protected Species

- 6.3.13 **Table 6.4** overleaf provides a summary of protected species records identified within data provided by rECOrd within a 2km radius of the site. Absence of a species record should not be taken as confirmation that a species is absent from the search area.

EPSM (European Protected Species Mitigation) Licences

- 6.3.14 Five EPSM licenses were identified during a search of MAGIC to have been granted within 2km of the Site at Peel Hall, Warrington. Information with respect to these records is provided in **Table 6.5**, overleaf.

Local records - Priority Species

- 6.3.15 In addition to the protected species listed in **Table 6.4**, the rECOrd desk study also identified 'Section 41' species (NERC Act, 2006) and Local Biodiversity Action Plan (LBAP) species. The legislation/policy relating to Section 41 Species and Biodiversity Action Plans is provided in Appendix **ECO 8**. Section 41 species and LBAP species recorded are listed in **Table 6.6**.

Local records - Invasive Species

- 6.3.16 **Table 6.7** provides a summary of invasive species records identified by the rECOrd desk study within a 2km radius of the site. Note that absence of a species record should not be taken as confirmation that a species is absent from the search area.

Local records - Species with no designations

- 6.3.17 A large number of species with no specific designations attached were identified by the local record centre data. This included 50 bird species common to garden, woodland, and wetland habitats; 57 flowering plant species, including ornamental species and those common to garden, woodland, grassland and wetland habitats; 4 common species of fungus, 293 invertebrate species of a variety of habitats including aquatic, woodland, garden, grassland, and wetland habitats, 6 common species of moss and 6 common species of terrestrial mammal.

Adjacent Planning Application/s

- 6.3.18 One application for the extension of an existing hospital carpark was identified north of the motorway, ~150m of the site area from 2016. This was approved and aerial imagery suggests the work has been completed. These works impacted upon formal habitats within the hospital grounds only. No ecology reports associated with this application are available on the planning portal.
- 6.3.19 The remainder of planning applications within 2km of the site made within the last 3 years comprise small-scale householder applications only, usually for extensions.

Table 6.4: Summary of Protected Species Records Provided by rECOrd Within 2km of Survey Area

Species	No. of Records	Most Recent Record	Proximity of Nearest Record to Study Area	Legislation	Section 41 Species	Cheshire BAP Species
Mammals						
Common pipistrelle (<i>Pipistrellus pipistrellus</i>)	16	2016	On site**	ECH 4, WCA 5, WCA 6	-	✓
European water vole (<i>Arvicola amphibius</i>)	7	2016	200m south-east	WCA 5	✓	✓
Herpetiles						
Common frog (<i>Rana temporaria</i>)	12	2016	540m north-west	WCA 5 S9(5)	-	-
Common toad (<i>Bufo bufo</i>)	7	2016	1.3km south-west	WCA 5 S9(5)	✓	-
Smooth newt (<i>Lissotriton vulgaris</i>)	5	2014	975m south-west	WCA 5 S9(5)	-	-
Common lizard (<i>Zootoca vivipara</i>)	1	2008	1.3km north	WCA 5	✓	-
Birds						
Barn owl (<i>Tyto alba</i>)	2	2012	720m north	WCA1i	-	✓
Black-necked grebe (<i>Podiceps nigricollis</i>)	14	2011	700m north	WCA1i	-	✓
Black tern (<i>Chlidonias niger</i>)	2	2011	>1km* (Houghton Green Pool)	WCA1i	-	-
Brambling (<i>Fringilla montifringilla</i>)	2	2012	725m north	WCA1i	-	-
Fieldfare (<i>Turdus pilaris</i>)	15	2014	65m north	WCA1i	-	-
Goldeneye (<i>Bucephala clangula</i>)	2	2012	810m north	WCA1ii	-	-
Green sandpiper (<i>Tringa ochropus</i>)	1	2012	810m north	WCA1i	-	-
Greenshank (<i>Tringa nebularia</i>)	2	2011	>1km* (Houghton Green Pool)	WCA1i	-	-
Hobby (<i>Falco subbuteo</i>)	2	2011	>1km* (Houghton Green Pool)	WCA1i	-	-
Kingfisher (<i>Alecedo atthis</i>)	2	2014	730m east	WCA1i	-	-
Little Ringed Plover (<i>Charadrius dubius</i>)	14	2012	800m north	WCA1i	-	-
Merlin (<i>Falco columbarius</i>)	5	2011	>1km* (Houghton Green Pool)	WCA1i	-	-
Peregrine (<i>Falco peregrinus</i>)	2	2012	715m north	WCA1i	-	-
Redwing (<i>Turdus iliacus</i>)	18	2014	270m south-east	WCA1i	-	-

Key:

*: Grid reference provided less than six figures, but listed with the recorded location

**:: Record detail = foraging activity as recorded by previous 2013/2015 survey work

ECH 4: Annex IV of the European Communities Council Directive on the Conservation of Natural Habitats and Wild Fauna and Flora. Animal and plant species of community interest in need of strict protection.

WCA 1i: Schedule 1 Part 1 of Wildlife and Countryside Act 1981 (as amended). Birds protected by special penalties at all times.

WCA 1ii: Schedule 1 Part 2 of Wildlife and Countryside Act 1981 (as amended). Birds protected by penalties during the close season for that bird.

WCA 5: Schedule 5 of Wildlife and Countryside Act 1981 (as amended). Protected animals (other than birds).

WCA 5 S9(5): Schedule 5 Section 9(5) of Wildlife and Countryside Act 1981 (as amended). Protected animals (other than birds). Protection limited to selling, offering for sale, processing or transporting for purpose of sale, or advertising for sale, any live or dead animal, or any part of, or anything derived from, such animal.

WCA 6: Schedule 6 of Wildlife and Countryside Act 1981 (as amended). Animals which may not be killed or taken by certain methods.

Note. This table does not include reference to the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats), the Bonn Convention on the Conservation of Migratory Species of Wild Animals or the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Table 6.5: Summary of granted EPSM bat licences within 2km of the Site at Peel Hall

Species	Distance & Vector from Site	Active Dates	Case Reference Number	Purpose
Common pipistrelle <i>Pipistrellus pipistrellus</i>	1.7km southeast	14/02/2014 – 31/07/2016	2014-5423-EPS-MIT	Destruction and damage to a maternity roost
Common pipistrelle <i>Pipistrellus pipistrellus</i>	1.9km southeast	03/03/2016 – 31/08/2017	2016-22136-EPS-MIT	Disturbance to a resting place
Great Crested Newt <i>Triturus cristatus</i>	615m due west*	11/01/2012 – 01/05/2012	EPSM2011-3316	To allow the destruction of a resting place
Great Crested Newt <i>Triturus cristatus</i>	1.99km southeast	19/05/2010 – 12/05/2012	EPSM2009-1280	To allow the destruction of a resting place
Great Crested Newt <i>Triturus cristatus</i>	~2.3km northeast**	25/07/2014 – 30/04/2015	2014-1645-EPS-MIT	To allow the damage of a resting place
*: Licenced work follows the linear feature of the M62 motorway.				
**: Licenced work follows the linear feature of the M62 motorway and thus may come within 2km of the site area.				

Table 6.6: S41 and LBAP species recorded within data provided by rECOrd

Species	No. of Records	Most Recent Record	Proximity of Nearest Record to Study Area	Section 41	Cheshire BAP
Mammals					
Brown hare (<i>Lepus europaeus</i>)	1	2008	1.2km west	✓	✓
West european hedgehog (<i>Erinaceus europaeus</i>)	16	2018	270m south-east	✓	-
Insects					
Centre-barred swallow (<i>Aththmia centrago</i>)	1	2012	>500m west*	✓	-
Cinnabar (<i>Tyria jacobaeae</i>)	6	2017	On site	✓	-
Ringlet (<i>Aphantopus hyperantus</i>)	1	2012	>1km north*	-	✓
Birds					
Bullfinch (<i>Pyrrhula pyrrhula</i>)	28	2014	270m south-east	✓	✓
Corn bunting (<i>Emberiza calandra</i>)	10	2014	>70m north*	✓	✓
Dunnock (<i>Prunella modularis</i>)	36	2014	>70m north*	✓	-
Grey partridge (<i>Perdix perdix</i>)	41	2017	30m south	✓	✓
Herring gull (<i>Larus argentatus</i>)	12	2014	>70m north*	✓	-
House sparrow (<i>Passer domesticus</i>)	35	2014	>70m north*	✓	✓
Lapwing (<i>Vanellus vanellus</i>)	60	2014	>70m north*	✓	✓
Reed bunting (<i>Emberiza schoeniclus</i>)	19	2012	>70m north*	✓	✓
Skylark (<i>Alauda arvensis</i>)	26	2014	>70m north*	✓	✓
Song thrush (<i>Turdus philomelos</i>)	43	2014	>70m north*	✓	✓
Starling (<i>Sturnus vulgaris</i>)	53	2014	On site	✓	✓
Tree sparrow (<i>Passer montanus</i>)	25	2012	>70m north*	✓	✓
Wood warbler (<i>Phylloscopus sibilatrix</i>)	1	2013	>2km south-west (Sankey Valley Park)	✓	-
Yellow wagtail (<i>Motacilla flava</i>)	1	2013	730m north	✓	-
Yellowhammer (<i>Emberiza citrinella</i>)	24	2012	>70m north*	✓	✓
Key: *: Grid reference provided less than six figures					

Table 6.7: Summary of Invasive Species Records Within 2km of Survey Area

Species	No. of Records	Most Recent Record	Proximity of Nearest Record to Study Area	Legislation
Plants				
Curly waterweed (<i>Lagarosiphon major</i>)	1	2016	>1.6m south-west*	WCA 9
Himalayan balsam (<i>Impatiens glandulifera</i>)	4	2012	900m west	WCA 9
Japanese knotweed (<i>Fallopia japonica</i>)	1	2008	1.3km south	WCA 9
New Zealand pygmyweed (<i>Crassula helmsii</i>)	3	2016	980m south-west	WCA 9
Rhododendron <i>Rhododendron ponticum</i>	1	2013	1.3km	WCA 9
Animal				
American mink (<i>Neovison vison</i>)	1	2016	1.18km south-west	WCA 9
Canada goose (<i>Branta canadensis</i>)	8	2012	260m south-east	WCA 9
Eastern grey squirrel (<i>Sciurus carolinensis</i>)	2	2017	On site	WCA 9
Red-eared terrapin (<i>Trachemys scripta</i>)	1	2011	980m south-west	WCA 9
Ruddy duck (<i>Oxyura jamaicensis</i>)	2	2012	810m north	WCA 9
Key: WCA 9: Schedule 9 of Wildlife and Countryside Act 1981 (as amended). Invasive, non-native, plants and animals. *: Grid reference provided less than six figures				

6.4 BASELINE HABITATS

Introduction

6.4.1 Section 6.4 of this Addendum serves as an update to the original Environmental Statement and Addendum 1; therefore it replaces the corresponding section of the original ES. Refer to original ES and Addendum 1 (Sections 6.4 & 6.5) for August 2015 and August 2017 Phase 1 Habitat Survey and Hedgerow Survey results.

6.4.2 Section 6.4 provides a summary of broad habitats recorded by the Phase 1 Habitat Survey. An overall Phase 1 Habitat Survey map is provided as **Appendix ECO 1**, which illustrates the location and extent of all broad habitat types recorded. The survey was carried out across various dates between May and October 2019 by Lorraine McKee MSc GradCIEEM, Project Ecologist. Weather conditions were generally dry at the time of each survey visit, although some site visits undertaken later in the season were after periods of heavy rain. Survey temperatures ranged from 10-31°C.

Habitat Descriptions

6.4.3 Species lists with DAFOR abundance scores collected for individual habitat areas are provided with detailed habitat descriptions and habitat maps as **Appendix ECO 9**. This current chapter

provides broad descriptions of each habitat type with references to representative and notable species only.

6.4.4 Habitats recorded by the survey within the application site are listed below, with the corresponding JNCC Phase 1 Habitat Survey codes (JNCC, 2010).

Woodland and Scrub

- A1.1.2: Plantation broadleaved woodland
- A2.1: Dense scrub
- A2.2: Scattered scrub
- A3.1: Scattered trees

Grassland

- B5: Marshy grassland
- B6: Species Poor Improved Grassland

Tall herb and fern

- C1.1: Bracken
- C3.1: Tall ruderal herb

Swamp, marginal and inundation

- F1: Swamp

Open water

- G1: Pond
- G2: Stream

Cultivated/disturbed land

- J1.2: Amenity grassland

Boundaries

- J2.1.2: Intact species-poor hedgerow
- J2.2.2: Defunct species-poor hedgerow
- J2.6 & G1: Dry & wet ditches

Other

- J3.6: Bare ground/hard standing
- J5: Fine-scale habitat mosaics of ruderal herb-scrub-grassland (C3.1, A2.1 and B2)

Plantation Broadleaved Woodland/Scrub

6.4.5 Two broad character types of woodland were present within the application site boundary, comprising young to early-mature plantation woodland, and established planted scrub species with a canopy height of over five metres.

6.4.6 Early-mature plantation woodland bordered the recreational field at the east of the site, comprising abundant ash (*Fraxinus excelsior*) and silver birch (*Betula pendula*) as dominant

canopy species and a well-developed, planted understorey of common broadleaved tree and shrub species. Ground flora was recorded as sparse.

- 6.4.7 Belts of early-mature woodland were also present along the southern site boundaries, either side of Radley Plantation. The woodland to the east of Radley Plantation comprised a mix of alder (*Alnus glutinosa*), sycamore (*Acer pseudoplatanus*), ash, oak (*Quercus robur*) and horse chestnut (*Aesculus hippocastanum*) as canopy species. Understorey species comprised a mix of regenerating willow (*Salix* spp.) and birch along with hawthorn (*Crataegus monogyna*), hazel (*Corylus avellane*) and raspberry (*Rubus idaeus*). Ground flora was indicative of damp conditions, and Himalayan balsam (*Impatiens glandulifera*) had partly encroached into the wood. The habitat was relatively structurally diverse owing to the mix of scrub and tree species and sizes present.
- 6.4.8 To the west of Radley Plantation, the woodland comprised a substantial belt of planted scrub species co-dominated by goat willow (*Salix caprea*) and silver birch, interspersed with occasional hawthorn, dogwood (*Cornus sanguinea*), hazel, cherry (*Prunus* sp.), holly (*Ilex aquifolium*) and rowan (*Sorbus aucuparia*). Ground flora was characterised by typical common shade tolerant species such as wood avens (*Geum urbanum*), ivy and male fern (*Dryopteris filix-mas*), which species such as red campion (*Silene dioica*) also present indicative of damp soil, and broadleaved helleborine (*Epipactis helleborine*) which is a species associated with disturbed ground. Residential gardens backs onto this habitat area and the woodland was severely degraded owing to extensive fly tipping and the presence of invasive species including giant hogweed (*Heracleum mantegazzianum*), Himalayan balsam and montbretia (*Crocus x crocosmiiflora*).
- 6.4.9 A ~1.3ha block of planted scrub species was present towards the centre of the site, south of Peel Hall. This was dominated by grey willow (*Salix cinerea*) and goat willow with occasional silver birch. This habitat was characterised by large planted scrub species as well as self-set saplings, and thus exhibited a relatively diverse habitat structure despite being species poor.

Scattered Scrub

- 6.4.10 The site was dominated by a series of abandoned agricultural fields undergoing seral succession from grassland through to woodland/scrub, and as such scattered scrub was a common habitat type throughout the site area, generally characterised by establishing grey willow, goat willow and/or bramble (*Rubus fruticosus* agg.).

Dense Scrub

- 6.4.11 Dense scrub habitats were found throughout the site at Peel Hall, comprising four general scrub character types: continuous bramble, grey/goat willow scrub, mixed scrub, and mature scrub. Continuous bramble scrub was encountered most often. These scrub types were generally found at boundaries and/or planted, in some cases as part of a former water management system. Additional species recorded within occasional areas of mixed scrub include elder *Sambucus nigra*, honeysuckle *Lonicera periclymenum*, oak and ash saplings.

- 6.4.12 A significant ~1.8ha block of grey willow scrub with occasional silver birch was present immediately south-east of Peel Hall buildings (centre-north of site), which occupied an area of wet ground bound by ditches to the north-east and south-east. The ground within this habitat area was uneven with localised impeded drainage, considered to be the result of heavy historic disturbance in this area. Regular natural ephemeral pools were present, with tall ruderal and wetland species occurring within clearings, dominated by common reed (*Phragmites australis*). This habitat had developed in size and structural integrity since 2013/2015 survey work composition had some affinity to wet woodland NVC habitat community 'W2' *Salix cinerea* – *Betula pubescens* – *Phragmites australis*, however was lacking downy birch and is still in the early stages of establishment with ground flora species generally representing former open ruderal and marshy grassland habitats, confirmed as previously present by habitat surveys and historic aerial imagery.

Scattered Trees

- 6.4.13 Scattered trees had generally been planted within amenity play areas, along streets as amenity planting and at field edges. Species recorded include cherry, horse chestnut, alder, ash, London plane (*Platanus × acerifolia*), lime (*Tilia sp.*), hornbeam (*Carpinus betulus*), oak and whitebeam (*Sorbus aria*). Trees were generally young to semi-mature with no major defects noted.

Marshy Grassland

- 6.4.14 Pockets of marshy grassland throughout the site were generally characterised by the same grasses and forbs found within the species poor improved grassland habitats, but with increased abundances of rush species (*Juncus spp.*) along with other competitive species associated with wet nutrient rich habitats such as common reed and marsh thistle (*Cirsium palustre*).
- 6.4.15 One small patch of floristically notable marshy grassland was present at the north-easternmost field on site, which included locally frequent common figwort (*Scrophularia nodens*) and southern marsh orchid (*Dactylorhiza praetermissa*).

Species Poor Improved Grassland

- 6.4.16 This comprised the most abundant habitat type within the site area. The majority of the site had been left fallow after historical arable usage, and the resultant grassland sward was recorded as generally rank in nature and very species poor with an average of 7.5 – 8.5 species per square metre (excluding injurious species). All grassland on site was suffering severe encroachment from tall ruderal and scrub habitats. Species compositions generally comprised a mix of competitive and agricultural species indicative of high nutrient levels and historic seeding such as cock's foot (*Dactylis glomerata*), meadow foxtail (*Alopecurus pratensis*), creeping bent (*Agrostis stolonifera*), rough meadow grass (*Poa trivialis*), false oat grass (*Arrhenatherum elatius*) and perennial ryegrass (*Lolium perenne*) and occasional locally dominance of species associated with moist ground conditions such as soft rush (*Juncus effuses*) and creeping buttercup (*Ranunculus*

repens). Yorkshire fog (*Holcus lanatus*) was the most frequently recorded species throughout the full extent of the site area.

6.4.17 The north-easternmost field of the survey area possessed the most species-diverse grassland habitat, mainly owing to the prominence of species associated with recently disturbed ground such as silverweed (*Argentina anserina*), changing forget-me-not (*Myosotis discolor*), hairy tare (*Vicia hirsuta*), common rampion fumitory (*Fumaria muralis*) and scented mayweed (*Pulicaria dysenterica*).

6.4.18 Local dominance of fleabane (*Matricaria chamomilla*) was also recorded in abundance across disturbed ground within the centre of the site.

Bracken

6.4.19 Stands of continuous bracken were present within two areas on site, both bounded by tall ruderal and scrub habitats. The stand to the east was comparatively small restricted to ditch side habitat, whilst the stand to the west of the site comprised a more substantial area.

Tall Ruderal Herb

6.4.20 Tall ruderal herb habitats were found throughout the grassland habitats and at habitat boundaries, frequently contributing to habitat mosaics in combination with grassland and/or scrub. Large swathes of continuous tall ruderal were present in the centre of the site, dominated by rosebay willowherb *Chamaenerion angustifolium* and creeping thistle (*Cirsium arvense*). These have significantly increased in extent since 2013/2015 habitat survey work.

6.4.21 One area of relative floristic diversity was recorded in the centre of the site, containing a mix of species associated with disturbed, wet ground amongst rosebay willowherb, including species such as bristly oxtongue (*Helminthotheca echioides*), redshank (*Persicaria maculosa*), butterbur (*Petasites hybridus*), changing forget-me-not (*Myosotis discolor*) and European field pansy (*Viola arvensis*).

Swamp

6.4.22 Dry stands of common reed (*Phragmites australis*) were present within and adjacent to Spa Brook and ditches at the west of the site, as well as along the west of Radley Plantation and Pond LWS. These stands had significantly increased in extent since 2013/2015 habitat survey work. The water table at these habitat areas was below ground throughout the year despite heavy rainfall, and tall ruderal and scrub species occasionally encroached on some areas.

Pond

6.4.23 Three manmade ponds were present within the centre of the site interlinked by dry ditches. The northernmost comprised a small linear pond, heavily shaded by immature willow scrub. Common duckweed (*Lemna minor*) covered the pond surface.

6.4.24 The remaining two ponds are located immediately north of Radley Plantation. One comprised a heavily-shaded, shallow pond surrounded by alder and scrub. No aquatic vegetation was present and marginal species were restricted to occasional soft rush and Himalayan balsam. The pond was dry during 2015 surveys, and water levels fluctuated in the 2019 season. The second pond was unshaded and dominated by reed canary grass (*Phalaris arundinacea*), with water pepper (*Persicaria hydropiper*) and American water plantain (*Alisma subcordatum*) occasionally present as submerged species.

6.4.25 Descriptions of off-site ponds within Radley Plantation are provided in **Appendix ECO 15** (great crested newt survey).

Stream

6.4.26 The northernmost section of Spa Brook contained a narrow, shallow stream which was recorded to dry out almost completely over the course of the summer. Dense bankside habitats included reed canary grass, bramble, ruderal herb and rank grasses. The central section appears to only hold water following heavy rain. The southern section of the brook was largely dry and choked by stands of common reed, reed canary grass and greater willowherb (*Epilobium hirsutum*). Tall ruderal herb and scrub including bramble and willow continue to dominate bankside habitats. The brook is culverted both at the north and southern site boundaries.

Amenity Grassland

6.4.27 Amenity grassland habitats present on site were largely used as playing fields and by dog walkers. The grassland community composition was typical of the habitat type, containing species indicative of an amenity grass seed mix and regular mowing such as perennial rye grass (*Lolium perenne*), white clover (*Trifolium repens*), dandelion (*Taraxcum officinale* ag. sp.), daisy (*Bellis perennis*) and selfheal (*Prunella vulgaris*).

Hedgerow

6.4.28 Intact species poor hedgerows were occasionally present within the site, generally to the east. These were generally hawthorn dominated with poor ground flora.

6.4.29 Defunct hedgerows were present in low densities across the site, largely within the east, and were generally fragmented and species poor. The majority of defunct hedgerows were dominated by hawthorn, and two graded into lines of grey and goat willow along ditches. Other rarely recorded woody species included dogwood, elder, blackthorn (*Prunus spinosa*) and hazel.

6.4.30 No notably diverse ground flora was recorded at the base of any hedgerows. No hedgerows were identified to qualify as 'important' hedgerows in relation to ecology or landscape value by the Hedgerows Regulations Assessment study (see **Appendix ECO 17**).

Dry Ditch

- 6.4.31 Dry ditches were present as boundary features to fields and woodland blocks, usually in conjunction with hedgerows or areas of planted scrub. Mammal burrows were sometimes present within ditches that were habitually dry, including rabbit and fox. No notably diverse ground flora was recorded within any of the ditches, which were mostly either crowded by dense reed or heavily shaded by woodland and scrub.

Wet Ditch

- 6.4.32 Ephemeral wet ditches were present on site, ranging from heavily shaded to open and overgrown by dense reed, scrub and ruderal herb. No notable plant communities were associated with these ditches, with plants generally indicative of nutrient enrichment. A wet ditch in the centre of the site was recorded as heavily polluted based on water colouration.

Bare ground/Hard standing

- 6.4.33 Areas of bare ground/hardstanding were associated roads, paths, and with the community centre at the south of the site in the form of play spaces and car parks.

Fine-scale habitat mosaics

- 6.4.34 Fine scale mosaics of tall ruderal herb, scrub and grasses were present throughout the abandoned fields on site, containing typical species of each habitat type as described above. Ratios of habitats within these mosaic habitats were variable depending on the successional stage.

Additional notes re: habitat damage

- 6.4.35 Stands of invasive species were present within the site. Whilst some stands were relatively small and/or localised, others were large and extensive, affecting many habitats within the site. Localised stands of Japanese knotweed (*Fallopia japonica*), cotoneaster (*Cotoneaster* sp.) and montbretia (*Crocasmia x crocosmiiflora*) were recorded; giant hogweed was present in an extensive stand bordering on residences; and Himalayan balsam was present in varying densities throughout the centre of the site. False Virginia creeper was also noted immediately adjacent to the site in two locations, within 2m of the site boundary.
- 6.4.36 A high proportion of the habitats on site were damaged due to a variety of flytipped materials, usually derived from household, garden, or food and drink waste. Asbestos was present within areas of the site where former farm buildings had been demolished or within flytipped waste. Fire damage was present within parts of the site, along with obvious areas where rough sleeping, drug and alcohol abuse had taken place in the past. A small marijuana growing operation was present to the north of the site. Extensive discarded litter was recorded throughout several habitat areas, including frequent discarded bags of dog waste close to footpaths and parks.

6.5 OVERVIEW OF PROTECTED SPECIES SURVEYS

Introduction

- 6.5.1 Section 6.5 of this Addendum serves as an update to the original Environmental Statement and Addendum 1; therefore it replaces the corresponding sections of the original ES. Refer to original ES and Addendum 1 for August 2015 and August 2017 Protected Species Survey results (6.6 – 6.13).
- 6.5.2 This section provides a summary of key findings from the most recent protected species surveys on site. Where relevant, comparisons are made with past survey data. Survey dates, personnel, methodologies, constraints and results are detailed within **Appendices ECO 9 to 16**.

Badger

- 6.5.3 Badger surveys have been undertaken at the site in 2015, 2016 and 2019. No badger setts or evidence of badger activity such as pawprints, latrines or snuffle holes, was recorded by any of the surveys within the site area, or within 50 m of the site area.

Water vole

- 6.5.4 A water vole survey was undertaken at the site in 2013 and 2015, which was updated in 2019. Spa Brook was considered suboptimal habitat for water vole by each of the three surveys across six years owing to its predominantly dry nature. The network of ditches around the site were also largely dry at the time of the survey visits, aside from one stretch of wet ditch habitat which was assessed by the survey and concluded to be unsuitable for water vole due to its shallow banks and polluted nature.
- 6.5.5 All accessible sections of Spa Brook and the ditches surrounding the site were inspected in detail in Spring 2019 and no evidence of water vole, such as burrows, latrines or feeding remains, was recorded, concluding the likely absence of water vole from within the survey area, however the density of vegetation such as dense stands of common reed prevented a full inspection, and a Summer survey was not possible.

Bats

Roosting bats

- 6.5.6 Six of the seven residences within the application site boundary were inspected and assessed by 2019 preliminary bat roost assessment of buildings (shown on Drawing 1820-A5-01, **Appendix ECO 10**). No bat surveys have been undertaken of these residences in previous years. All surveyed residences and associated outbuildings were concluded to possess low or negligible potential value by roosting bats and no evidence of bat roosts was identified by the assessments. The buildings with low potential value for roosting bats were subject to one dusk emergence survey and no potential bat roosting activity was recorded.

- 6.5.7 It is considered unlikely for bat roosts to be present within the inaccessible property onsite, or any of the three terrace properties that adjoin the onsite buildings, solely based on observations during survey work on adjacent properties, however daytime inspections of the buildings will be required as a minimum to verify this.
- 6.5.8 All trees within and immediately adjacent to the site area were assessed in terms of potential to support roosting bats in conjunction with the Phase 1 Habitat Survey visits. Two trees were identified to possess low potential value for roosting bats (shown on Drawing 1820-A5-01, **Appendix ECO 10**). All other trees surveyed were not of an age or structure likely to contain potential roosting features, and no other features were recorded. No potential roosting features in trees have been identified by previous 2013/2015 survey work.
- 6.5.9 One of the two trees with low bat potential may be directly impacted upon by proposals (Tree T1), and as such was subject to one dusk emergence/dawn re-entry survey as a precaution. No potential bat roosting activity was recorded.

Foraging and Commuting bats

- 6.5.10 To assess the current value of the site for foraging and commuting bats, monthly manual bat transect surveys were undertaken at the site from April to September 2019.
- 6.5.11 The survey results indicate the close proximity of a number of small bat roosts to the site including common pipistrelle, soprano pipistrelle, noctule and Nathusius pipistrelle and it is highly likely that buildings in the general local area surrounding the site support roosting pipistrelle bats. A peak in June common pipistrelle activity levels implies the potential presence of a common pipistrelle maternity roost within the local area.
- 6.5.12 Field boundary hedgerows, ditches and woodland edge habitats were most utilised by foraging and commuting bats. The greatest number of bat species and concentration of bat activity was recorded at the northern-most tip of Radley Plantation, adjacent to woodland edge and pond habitats.
- 6.5.13 Key habitats of importance to common and soprano pipistrelle bats include pond habitats, hedgerows and boundary habitats to playing fields. The few Nathusius pipistrelle recordings were generally at the west of the site. Noctule bats regularly utilise the open grassland and ruderal habitats within the centre and west of the site area for foraging, although no more than one bat was recorded at any one time. Based on the locations of Natterer's bat recordings, it is assumed that the species utilises Radley Plantation and connecting woodland habitats for foraging. Artificial lighting from the M62 resulted in reduced bat activity along the northern boundary, although noctules were occasionally recorded to pass over the carriageway.
- 6.5.14 The overall number of recorded bat contacts at Peel Hall was considered to be relatively low

considering the size of the site, however results imply the site is of local importance to noctule and pipistrelle species roosting within the local area.

- 6.5.15 The common pipistrelle activity results align with previous bat surveys undertaken at the site in 2013, 2015 and 2016. However, no other species aside from common pipistrelle bats were recorded the previous survey work. The additional four species recorded in 2019 may be owing to the increased number of survey visits undertaken across the activity season (owing to updated Bat Conservation Trust guidance (Collins, 2016), the succession of site habitats towards scrub and/or potential increases in soil moisture.

Breeding birds

- 6.5.16 Twenty-six bird species were recorded during the 2019 Breeding Bird Survey, **Table 6.8** on the following page shows those considered to be breeding, those present in suitable habitat but with no evidence of breeding, and those not breeding.
- 6.5.17 Reference to the study undertaken in 2015 identified a natural trend that the site had become increasingly rank/coarse through seral succession since the original survey in 2013. The survey in 2017 showed that this trend had continued with notable increases in rankness and the development of scrub communities, thus making the site less suitable for those species which require shorter open grassland habitats for nesting, such as skylark and meadow pipit. Consequently, no ground-nesting species were recorded during the survey in 2017. However, the 2019 survey revealed that some grassland areas had been cut which reduced the immediate rankness and temporarily arrested the succession to scrub as noted previously. As a result of this management, suitability for ground-nesting species improved and an estimated two pairs of skylark were recorded as breeding on the site. For the other species recorded on site in 2019, the site remains as suitable as it was in 2013 and 2017.
- 6.5.18 An estimation of breeding pairs based on observations made in the field is provided in column 3 of **Table 6.9** overleaf. It should be noted that the 'actual' number of breeding pairs might differ from the figure given, in addition, other species recorded in column two of **Table 6.8** might also possibly breed on site although activity to indicate/suggest breeding may have been absent or not observed during the survey.
- 6.5.19 **Table 6.9** also provides a broad comparison between the species recorded during the 2013 survey and those recorded in 2017. Overall, the number of species breeding on the site hasn't changed significantly with twelve, thirteen and twelve species considered to be breeding on site in 2013, 2017 and 2019 respectively. However, the range of species has changed as well as the number of registered territories (estimated). The return of skylark as a breeding species is attributed to the mowing of the grassland which has provided an open grass sward habitat which is more suitable for ground-nesting species. Blackcap was also recorded as a breeding species

Table 6.8: Breeding Status of Birds Recorded in 2019

Birds Recorded as Breeding	Birds Present (no evidence of breeding)	Birds not Breeding (no suitable habitat, foraging/flying over or passage migrant)
Blackbird Robin Dunnock S41‡ Wren Chiffchaff Blackcap Whitethroat Skylark S41*† Woodpigeon Chaffinch Reed bunting S41‡† Magpie	Mistle thrush* Song thrush S41*† Blue tit Great tit Willow warbler Bullfinch S41‡† Goldfinch Goldcrest	Carion crow Jackdaw Swift‡ Swallow Starling S41*† House sparrow S41*†
Total: 12	Total: 8	Total: 6
Key: S41 = Section 41: Species of Principal Importance in England NERC Act 2006. *Red List - Birds of Conservation Concern 4 (BoCC4) ‡ Amber List - Birds of Conservation Concern 4 (BoCC4) † Cheshire Local Biodiversity Action Plan (BAP)		

Table 6.9: Breeding Status Comparison Table

Bird Species	2013 (including number of pairs)	2017 (including number of pairs)	2019 (including number of pairs)
Skylark	2	Species not recorded	2
Meadow pipit	1	Species not recorded	Species not recorded.
Reed bunting	2	Species not recorded	2
Blackbird	1	12	10
Song thrush	1	1	Species not recorded as breeding
Robin	1	5	10
Dunnock	Species not recorded as breeding	3	4
Wren	Species not recorded as breeding	14	10
Chiffchaff	1	2	2
Blackcap	1	Species not recorded as breeding.	4
Whitethroat	1	10	6
Sedge warbler	Species not recorded	2	Species not recorded
Willow warbler	Species not recorded	2	Species not recorded as breeding
Woodpigeon	3	8	6
Chaffinch	2	2	2
Moorhen	2	1	Species not recorded
Magpie	Species not recorded as breeding	2	2
Total Number of Species	12	13	12

in 2019 despite it being recorded on only a single visit in 2017. In addition, reed bunting has returned as a breeding species after its absence in 2017.

6.5.20 The reasons why blackcap and reed bunting have returned to the site to breed is not clear, as there has been no significant change in the extent of suitable nesting habitat for these species on

the site. Consequently, this change is attributed to 'natural variation' in the distribution of the population locally.

- 6.5.21 Increases in the numbers of the more 'ubiquitous' species such as wren and blackbird was reported in 2017, and this increase was attributed as much to the earlier survey season which had improved the chances of registrations, as to any increase in available suitable habitat.
- 6.5.22 In 2019 the survey was undertaken at an optimum period and the numbers of pairs of these species recorded remain relatively stable from the 2013 and 2017 surveys.
- 6.5.23 The number of pairs of whitethroat recorded as breeding in 2017 was ten, in comparison to the six pairs recorded in 2019. Whilst the scrub habitats on the site have been retained, the mowing of the site's grassland has changed the general structure of the site resulting in less tall grassland cover, and less tall grass/scrub interface which is one of the preferred nesting habitats of this species.
- 6.5.24 The change in habitat might have influenced numbers, but general variation in the population locally might also be a significant influencing factor.
- 6.5.25 The absence of song thrush and sedge warbler cannot be attributed to management or any on-site natural trend as the extent of suitable nesting habitat available for those species hasn't significantly changed.

Barn Owl

- 6.5.26 The site had been evaluated in 2015 and found to be clearly unsuitable for sustainable barn owl occupation. The site was re-evaluated in 2019 as a precaution.
- 6.5.27 Whilst the habitat on the site is potentially suitable for hunting barn owl, the species was not recorded during any 2013, 2015 or 2019 bat or bird survey work at the site despite being undertaken at the optimum time for barn owl activity during the main breeding period.
- 6.5.28 No potential suitable nesting sites are present on or close to the site. The combined presence of the M62 and the absence of appropriate nest sites south of the motorway, has effectively removed any reasonable possibility that a resident population of barn owls on the site is sustainable. In addition, suitable grassland foraging habitats are suffering severe scrub encroachment, thus further reducing the suitability of the site for hunting barn owl.
- 6.5.29 The site was concluded to be unsuitable for sustainable barn owl occupation, in line with the 2015 survey work.

Amphibians

- 6.5.30 The three ponds on site and three ponds within Radley Plantation were subject to great crested newt presence/absence surveys in 2012 and 2019.
- 6.5.31 In contrast to the negative 2012 GCN survey work (bottle trapping and torching methods), Environmental DNA analysis identified the presence of GCN DNA within two ponds on site and further survey work (bottle trapping and torching methods) identified a peak count of one great crested newt (GCN) along with GCN eggs within one pond on site (Drawing 1820-T7-01, **Appendix ECO 15**). A peak count of less than 10 GCN equates to a 'small' population class size. It is possible that GCN have colonised the site either from ponds located south-west of the site in Peel Park, or from terrestrial habitats along the motorway verge (EPSM licences identified by desk study along M62 within 2km of site). Motorway verge dispersal is considered unlikely in this instance owing to the fragmentation effects of junction slip roads at either side of the site area. The ponds located within Peel Hall Park were not included in the original survey effort owing to their distance being over 250 metres from the closest proposed area of built development (when intervening dispersal barriers are taken into account). Any future updates to survey work will include these ponds to gauge a full understanding of GCN meta-population dynamics at the site.
- 6.5.32 Low numbers of smooth newts and common toad were also recorded by the GCN survey.

Notable Incidental observations

- 6.5.33 A list of sightings or evidence of faunal species that were recorded as incidental observations on site during the 2019 Phase 1 Habitat Survey visits is included within **Appendix ECO 9**. These species included four Section 41 priority species (NERC Act, 2006): cinnabar moth *Tyria jacobaeae*, European hedgehog *Erinaceus europaeus*, polecat *Mustela putorius* and starling *Sturnus vulgaris*. Evidence of one invasive Schedule 9 faunal species was seen on site: grey squirrel *Sciurus carolinensis*.

6.6 ASSESSMENT OF ECOLOGICAL IMPACTS

- 6.6.1 Section 6.6 of this Addendum serves as an update to the original Environmental Statement and Addendum 1; therefore it replaces the corresponding sections of the original ES (Section 6.14). Refer to original ES and Addendum 1 for August 2015 and August 2017 assessments of ecological receptors and impact assessment.
- 6.6.2 A detailed assessment has been undertaken which collates the existing baseline information through field surveys and desk study information, that will reasonably conclude the ecological value of site features and predict potential impacts of proposals on ecological receptors.
- 6.6.3 Predicted impacts are based on the latest site Parameters Plan (**Appendix APP 6**). No detailed landscaping plans are yet available.

Nature Conservation Areas

- 6.6.4 No designated nature conservation sites are directly associated with the site.

Radley Plantation and Pond Local Wildlife Site

Nature Conservation Importance

- 6.6.5 Radley Plantation and Pond Local Wildlife Site (LWS) comprises an area of broad-leaved woodland located immediately adjacent to the application site, which is designated as a Local Wildlife Site based on the following qualifying criteria: 'accessible natural greenspace' and 'ponds and ditches'. No ancient woodland is associated within this site. Radley Plantation and Pond LWS is of '**County**' value in terms of nature conservation importance.

Application Site functionality

- 6.6.6 The application site does not play a key part in either of the qualifying criteria for Radley Plantation and Pond LWS, although nearby ponds on site may contribute to the diversity and resilience of any pond metapopulation ecology at the conservation site.
- 6.6.7 The application site directly abuts the woodland of Radley Plantation and Pond providing semi-natural woodland edge habitats. Woodland edge habitats are of importance to ecological functionality and resilience of woodland habitats.

Likely scale of impacts in the absence of mitigation – Construction

- 6.6.8 Given the proximity of the proposal site to Radley Plantation, indirect impacts of site development in the form of noise, pollution, lighting and dust are potential risks to the LWS habitats and associated wildlife. Removal of connecting woodland and semi-natural woodland edge habitats

immediately adjacent to the LWS and one nearby pond may adversely affect habitat functionality, connectivity, resilience and ecology.

- 6.6.9 The potential impact magnitude is considered '**Moderate**' (deterioration of feature).
- 6.6.10 The overall potential impact of site construction work in the absence of mitigation is '**Moderate**' (County importance: Moderate impact).

Required mitigation and residual impact – Construction

- 6.6.11 A Construction Environmental Management Plan (CEMP) will be implemented to minimise any potential indirect impacts of construction works to LWS habitats. This will incorporate good working practices to minimise noise, dust, artificial light, run-off and pollution.
- 6.6.12 Six ponds are proposed as part of habitat creation works, including one immediately adjacent to the LWS.
- 6.6.13 A buffer of between 15 and 20 metres around the northern half of the woodland has been designed into the site layout, which will retain a functional woodland edge habitat, avoid any root protection areas and allow for a substantial belt of habitat creation and enhancement.
- 6.6.14 No residential development will be located within 20metres of the southern half of the LWS, however current semi-natural woodland edge habitats (tall ruderal herb and scrub) will be displaced by recreational playing fields.
- 6.6.15 With mitigation, the adjusted potential impact magnitude is considered as '**Minor**' and thus the adjusted overall potential impact of site construction work is '**Slight**' (County importance: Minor effect impact).

Likely scale of impacts in the absence of mitigation – Operational

- 6.6.16 The nature of proposals will undoubtedly cause an increase in public access to Radley Plantation and Pond LWS. However, the LWS already currently experiences high levels public usage owing to its ease of accessibility from surrounding extensive residential areas and the site partly qualifies as a LWS owing to its value as 'accessible natural greenspace'. The LWS is not notified for species communities or ground flora that are susceptible to human disturbance, and in line with the LWS citation, field observations from site visits confirm a sparse woodland ground flora, likely owing to a combination of public use and an abundance of sycamore. An increase in public access is not anticipated to greatly influence the character or value of the LWS.
- 6.6.17 The potential impact magnitude is considered as '**Nil Effect**' and the overall potential impact of site operation in the absence of mitigation is '**Non-significant**' (County importance: Nil Effect).

Recommended mitigation and residual impact – Operational

- 6.6.18 The development presents an opportunity to enhance habitats within the Local Wildlife Site through for example funding invasive species control, footpath infrastructure and/or management of sycamore to allow for the establishment of a more diverse ground flora.
- 6.6.19 With mitigation, the potential impact magnitude is considered as **'Beneficial'** and thus the adjusted overall potential impact of site operation is **'Not Significant'** (County importance: Beneficial).

Other Local Wildlife Sites

- 6.6.20 All other nature conservation areas are located over 0.5km from the site with poor habitat connectivity and are not discussed further within the current report.
- 6.6.21 The SSSI Risk Impact Zones within which the site is located do not specify further consultation with Natural England for residential planning applications in relation to SSSIs.

Site habitats

Grassland

Nature Conservation Importance

- 6.6.22 None of the grassland habitats on site were concluded to qualify as good quality priority habitats, primarily owing to their species-poor nature and prominence of rank and agricultural grass species. The species assemblages present do not qualify as species-rich in relation to the Magnificent Meadow criteria (see **Appendix ECO 9**), and do not qualify as Local/UK BAP grasslands or 'restorable grassland' in relation to the Cheshire Local Wildlife Site selection criteria (Cheshire Wildlife Trust 2014). All grassland on site is experiencing severe encroachment from ruderal and scrub.
- 6.6.23 Despite the low quality of grassland, owing to the extent and semi-natural nature of the grassland in comparison to the intensively managed wider landscape, the habitat is considered of **'Local'** value in terms of nature conservation importance.

Likely scale of impacts in the absence of mitigation – Construction

- 6.6.24 Loss of >30ha of low diversity coarse/improved grassland during construction.
- 6.6.25 The potential impact magnitude is considered **'High'**, and thus the overall potential impact of site construction work in the absence of mitigation is **'Slight'** (Local importance: High impact).

Required mitigation and residual impact – Construction

- 6.6.26 The impact is partially reversible by the provision of 14.6ha of habitat creation and/or enhancement, which will include a mosaic of species-rich grassland, wetland habitats, woodland and scrub. Over 7ha of amenity grassland will also be created.

- 6.6.27 With mitigation, the potential impact magnitude is considered as **'Minor'** and the adjusted overall potential impact of site construction work is **'Not Significant'** (Local importance: Minor impact).

Woodland

Nature Conservation Importance

- 6.6.28 The woodlands within the site boundary are predominantly immature and do not qualify as UK or local priority woodland habitats owing to a lack of affiliation with any relevant NVC communities. The woodlands on site are largely degraded owing to extensive fly tipping and presence of invasive species. However, woodland habitats are likely to be of functional value owing to connectivity with Radley Plantation and Pond LWS and contribution to the site-scale structural habitat diversity of the site area.
- 6.6.29 The woodland areas on site are considered of **'Local'** value in terms of nature conservation importance.

Likely scale of impacts in the absence of mitigation – Construction

- 6.6.30 Proposals imply the direct loss of ~3.3ha of immature woodland during construction. Potential indirect impacts of site construction work include pollution, dust, disturbance and root damage.
- 6.6.31 The potential impact magnitude is considered **'High'**, and the overall potential impact of site construction work in the absence of mitigation is **'Slight'** (Local importance: High impact).

Required mitigation and residual impact – Construction

- 6.6.32 The impact is reversible by the provision of 14.6ha of habitat creation and/or enhancement on site, which will include a minimum of 3.3ha of woodland.
- 6.6.33 The woodland areas to be retained will be enhanced by the removal of invasive species, installation of deadwood habitat and sensitive woodland management.
- 6.6.34 A Construction Environmental Management Plan shall be required to ensure pollution prevention and tree protection measures are in place throughout works, in accordance with British Standard "Trees in relation to construction - Recommendations" BS5837:2005.
- 6.6.35 With mitigation, the potential impact magnitude is considered as **'Minor'** and the adjusted overall potential impact of site construction work is **'Not Significant'** (Local importance: Minor impact).

Likely scale of impacts in the absence of mitigation – Operational

- 6.6.36 The nature of proposals will undoubtedly cause an increase in public access to woodland habitats. The woodlands are currently highly disturbed and subject to fly tipping and antisocial behaviour. No notable ground flora potentially sensitive to human disturbance was recorded by baseline

surveys. As such, an increase in public access is not anticipated to greatly influence the character or value of the woodlands on site.

- 6.6.37 The potential impact magnitude is considered '**Nil Effect**', and the overall potential impact of site operation in the absence of mitigation is '**Not Significant**' (Local importance: Nil Effect).

Recommended mitigation and residual impact – Operational

- 6.6.38 Site development, removal of waste by a landscape management team and the creation of formal footpaths with shrubs either side may reduce habitat degradation, concentrate footfall and allow the recovery of wider woodland ground flora.
- 6.6.39 Layout plans will ensure that no proposed residential gardens back onto woodland habitats, removing the risk of increased fly-tipping.
- 6.6.40 With mitigation, the potential impact magnitude is considered potentially '**Nil Effect/Beneficial**' and the adjusted overall potential impact of site construction work is '**Not Significant**' (Local importance: Nil Effect/Beneficial).

Ponds

Nature Conservation Importance

- 6.6.41 Good quality ponds are UK priority habitats. The ponds on site were considered of poor to moderate quality based on water quality, heavy shade, vegetation and permanence, however may form part of the surrounding network of ponds within Radley Plantation.
- 6.6.42 The ponds on site are considered of '**Site-Local**' value in terms of nature conservation importance.

Likely scale of impacts in the absence of mitigation – Construction

- 6.6.43 Proposals imply the direct loss of one of the three ponds during construction.
- 6.6.44 Potential indirect impacts of site construction work include runoff, pollution and dust.
- 6.6.45 The potential impact magnitude is considered '**High**', and the overall potential impact of site construction work in the absence of mitigation is '**Slight**' (Site-Local importance: High impact).

Required mitigation and residual impact

- 6.6.46 The impact is reversible by the provision of seven new ponds on site, three of which will be managed for wildlife and four of which will form part of a SUDS system.
- 6.6.47 The two ponds to be retained on site will be enhanced by opening up overshadowing canopies, the removal of invasive species, plug planting of aquatic species and reprofiling if appropriate.

6.6.48 A Construction Environmental Management Plan shall be required to ensure protection of aquatic habitats throughout development work from indirect impacts such as pollution or siltation. Any drainage/SUDS scheme shall be designed specifically to ensure no silt or pollutants enter the ponds.

6.6.49 With mitigation, the potential impact magnitude is considered as '**Minor**' and the adjusted overall potential impact of site construction work is '**Not Significant**' (Site-Local importance: Minor impact).

Likely scale of impacts in the absence of mitigation – Operational

6.6.50 Development may result in pond pollution through site runoff from roads, and increased public disturbance through play, swimming dogs or plant/fish introduction etc.

6.6.51 The potential impact magnitude is considered '**High**', and the overall potential impact of site operation in the absence of mitigation is '**Slight**' (Site-Local importance: High impact).

Recommended mitigation and residual impact – Operational

6.6.52 The proposed SUDS system shall be designed to ensure all retained and created ponds are protected from pollution/siltation.

6.6.53 Walkway barriers and information boards around ponds detailing sensitive pond ecology and advising dogs are kept out of water.

6.6.54 With mitigation, the potential impact magnitude is considered potentially '**Nil Effect**' and the adjusted overall potential impact of site operation is '**Not Significant**' (Local importance: Nil Effect).

Stream & Ditches

Nature Conservation Importance

6.6.55 River habitats of high ecological quality, chalk rivers, headwaters and those that support rare or protected species qualify as Section 41 Habitat of Principal Importance (NERC Act, 2006), and good quality ditch habitats can also be of high ecological value. Spa Brook is a mostly dry, highly modified, silted stream with limited flowing water, a deep silt substrate, and choked by stands of common reed and scrub. No aquatic vegetation or open water of good quality is present on site. The stream is fed by ditch boundaries of intensive arable farmland to the north of the M62 and is culverted for a significant distance to the south of the site. The brook was considered to be in poor condition, with no obviously good quality habitat up or downstream from the site.

6.6.56 The ditch habitats on site were mostly heavily shaded, polluted and/or dry, thus considered to be in poor condition.

- 6.6.57 The stream and ditch habitats on site are considered of '**Site-Local**' value in terms of nature conservation importance.

Likely scale of impacts in the absence of mitigation – Construction

- 6.6.58 All streams and ditches will be retained as part of proposals, however roads will cross Spa Brook at three locations and cross ditches at five locations. Potential indirect impacts of site construction work include runoff, pollution and dust.
- 6.6.59 The potential impact magnitude is considered '**Moderate**', and the overall potential impact of site construction work in the absence of mitigation is '**Slight**' (Site-local importance: Moderate impact).

Required mitigation and residual impact

- 6.6.60 Spa Brook and wet ditches will be protected by 10 metre construction exclusion buffer zones. The water course will be enhanced by reed management, scrub management and reprofiling were feasible and appropriate.
- 6.6.61 Any drainage/SUDS scheme shall be designed specifically to ensure no silt or pollutants enter the watercourse or wet ditches. A Construction Environmental Management Plan shall be required to ensure protection of aquatic habitats throughout development work from indirect impacts such as pollution or siltation.
- 6.6.62 With mitigation, the potential impact magnitude is considered as '**Minor**' and the adjusted overall potential impact of site construction work is '**Not Significant**' (Site importance: Minor impact).

Likely scale of impacts in the absence of mitigation – Operational

- 6.6.63 Development may result in stream/ditch pollution through site runoff from roads.
- 6.6.64 The potential impact magnitude is considered '**High**', and the overall potential impact of site operation in the absence of mitigation is '**Slight**' (Site-Local importance: High impact).

Recommended mitigation and residual impact – Operational

- 6.6.65 The proposed SUDS system shall be designed to ensure all retained and created ponds are protected from pollution/siltation.
- 6.6.66 With mitigation, the potential impact magnitude is considered potentially '**Nil Effect**' and the adjusted overall potential impact of site operation is '**Not Significant**' (Local importance: Nil Effect).

Hedgerows

Nature Conservation Importance

- 6.6.67 No hedgerows on site were classed as 'important' under the Hedgerow Regulations (1997) in relation to ecology or landscape value. All native hedgerows qualify as Habitats of Principal Importance (NERC Act, 2000) and are Cheshire Biodiversity Action Plan Habitats, which includes all hedgerows on site. The hedgerows are largely fragmented, outgrown and species-poor, and thus represent a priority habitat in poor condition in terms of structure and diversity, although several are associated with ditches which increases habitat distinctiveness.
- 6.6.68 The hedgerow habitats on site are considered of '**Site-Local**' value only in terms of nature conservation importance.

Likely scale of impacts in the absence of mitigation – Construction

- 6.6.69 All hedgerows on site shall be retained, however two short sections will be displaced at cut through points for the proposed link road. Potential indirect impacts of site construction work include pollution, disturbance, root damage and dust.
- 6.6.70 The potential impact magnitude is considered '**Moderate**', and the overall potential impact of site construction work in the absence of mitigation is '**Slight**' (Site-Local importance: Moderate impact).

Required mitigation and residual impact

- 6.6.71 A Construction Environmental Management Plan shall be required to ensure pollution prevention and hedgerow protection measures are in place throughout works.
- 6.6.72 All retained hedgerow sections will be separated from any development by minimum two metre buffer zones of species-rich grassland, and any gappy hedgerow sections will be planted up and/or laid to enhance habitat integrity. New hedgerow habitat will also be created as part of the proposed landscaping plans, which should seek to be native and species-diverse to maximise ecological value.
- 6.6.73 With mitigation, the potential impact magnitude is considered as '**Minor**' and the adjusted overall potential impact of site construction work is '**Not Significant**' (Site-Local importance: Minor impact).

Reedbed

Nature Conservation Importance

- 6.6.74 The dense stands of common reed on site are not typical of those associated with Section 41 priority habitats, being permanently dry.

- 6.6.75 The secondary dry reedbed habitats on site are considered of **'Site-Local'** value in terms of nature conservation importance.

Likely scale of impacts in the absence of mitigation – Construction

- 6.6.76 Approximately ~2ha of secondary reedbed on abandoned farmland will be displaced.
- 6.6.77 The potential impact magnitude is considered **'High'**, and the overall potential impact of site construction work in the absence of mitigation is **'Slight'** (Site-Local importance: High impact).

Required mitigation and residual impact

- 6.6.78 The loss of wetland habitat will be partially compensated for by the creation of SUDS, ponds, balancing ponds and ditch/stream enhancement.
- 6.6.79 As this habitat will be mostly lost, the potential impact magnitude is considered unchanged as **'High'** and the overall potential impact of site construction work with mitigation is **'Slight'** (Site-Local importance: High impact).

Tall ruderal herb, scrub and bracken

Nature Conservation Importance

- 6.6.80 Individual habitats of low distinctiveness and poor species diversity, reflective of high nutrient status of soils. These habitats are not listed as local or priority habitats. The habitats contribute to the wider site-scale habitat mosaic (see 6.6.86).
- 6.6.81 The tall ruderal, scrub and bracken habitats on site are considered of **'Site'** value in terms of nature conservation importance.

Likely scale of impacts in the absence of mitigation – Construction

- 6.6.82 Habitats to be largely displaced, including over 2ha of scrub habitat.
- 6.6.83 Impact partially reversible through relaxed management of scrub, hedgerow and woodland habitat edges, and 14.6ha of habitat creation, to include areas of scrub planting.
- 6.6.84 The potential impact magnitude is considered **'Moderate'**, and the overall potential impact of site construction work in the absence of mitigation is **'Non-significant'** (Site importance: High impact).

Required mitigation and residual impact

- 6.6.85 No habitat-specific mitigation required.

Overall Habitat Mosaic

Nature Conservation Importance

- 6.6.86 'Habitat mosaics' measuring over 1ha in size can deem an area of land to be of county-level importance in Cheshire, but only if the individual contributing habitats meet LWS criteria in every way aside from size (Cheshire Wildlife Trust, 2014). All of the individual habitats on site are degraded and do not meet the LWS criteria. Despite not being of district/LWS quality, the overall mosaic of semi-natural habitats that dominates the site is locally unique and represents the largest area of semi-natural habitat in the locality.
- 6.6.87 The overall site-scale habitat mosaic is considered of '**Local-District**' value in terms of nature conservation importance.

Likely scale of impacts in the absence of mitigation – Construction

- 6.6.88 Displacement of the majority of semi-natural habitats with residential development and amenity space.
- 6.6.89 The potential impact magnitude is considered '**High**', and the overall potential impact of site construction work in the absence of mitigation is '**Moderate**' (Local-District importance: High impact).

Required mitigation and residual impact

- 6.6.90 The loss of habitat will be partially compensated for by 14.6ha of habitat creation and/or enhancement as part of site plans, to include a mosaic of moderate to high quality habitats including species-rich grassland, scrub, wetland and woodland creation.
- 6.6.91 As the majority of the open semi-natural mosaic habitat across the site area will be displaced, the potential impact magnitude is considered unchanged as '**High**' and thus overall potential impact of site construction work with mitigation remains '**Moderate**' (Local-District importance: High impact).

Other habitats

- 6.6.92 No habitat that could potential qualify as traditional orchard was identified on site, which was identified as potentially present by the ecological desk study.

Protected / priority species

- 6.6.93 Protected and notable species that have been identified by the desk study, protected species surveys and those for which potentially suitable habitat occurs within or adjacent to the site, are discussed in the text below in terms of the likely impact of site proposals.

Mammals

Badger

Nature conservation importance

- 6.6.94 No evidence of badger was identified on or adjacent to the site area by any surveys between 2013 and 2019, indicating the likely absence of this species.

Likely scale of impacts in the absence of mitigation

- 6.6.95 The potential impact magnitude is considered '**Nil effect**'.

Required mitigation and residual impact

- 6.6.96 No specific mitigation required. However, if during site works there is reason to believe that any badger setts have become established, works should cease and further ecological advice should be sought.
- 6.6.97 Due to the mobile nature of badger, as a precautionary measure, a repeat survey should be carried out prior to any works commencing.

Water vole

Nature Conservation Value

- 6.6.98 No evidence of water vole was identified on or adjacent to the site area by any surveys at the site between 2013 and 2019, and the watercourses and ditches on site are considered suboptimal for the species. Owing to areas of dense scrub and reed, survey work has been subject to significant constraints and although likely, the absence of water vole cannot be categorically confirmed. In addition, the desk study search returned records of water vole ~200m from the site, although along water courses unconnected to the site.
- 6.6.99 Although presence is unlikely, the site value for water voles is classed as '**unknown**' as a precaution.

Likely scale of impacts in the absence of mitigation

- 6.6.100 Potential habitat loss and disturbance caused by site clearance, and several road crossings across ditches, including three road crossings across Spa Brook. The potential impact magnitude is considered '**High**'.

Required mitigation and residual impact

- 6.6.101 Precautionary buffer zones of habitat protection and enhancement measuring at least 10 metres in width have been incorporated into proposals along Spa Brook and all other site ditches as mitigation for water voles.
- 6.6.102 A precautionary water vole protection strategy is provided as **Appendix ECO 6**, which includes pre-works checks and sensitive vegetation clearance methodologies at each of the road crossing

points. No features will be installed beneath the road crossings such as grills which would block the Spa Brook or ditch habitats for wildlife including small mammals.

6.6.103 The adjusted potential impact magnitude with mitigation is considered '**Minor**' for water vole potentially present.

Likely scale of impacts in the absence of mitigation – Operational

6.6.104 See Paragraphs 6.6.63 to 6.6.66.

Bats

Nature Conservation Importance

6.6.105 No potential roosts were identified within the buildings or trees on site, however one property on site and several properties directly connecting to the site buildings could not be fully assessed owing to access constraints. In addition, all trees with bat roosting potential should be considered part of a resource that will be used at one time or another by tree-roosting bats (Collins, 2016).

6.6.106 The building habitats are of '**unknown**' roosting value for bats, whilst the tree habitats on site are considered of potential '**site**' value for roosting bats.

6.6.107 Five bat species utilise the site for foraging and commuting including common and uncommon species. The bat species assemblage does not currently qualify to be of county importance for bats according to the LWS selection criteria (Cheshire Wildlife Trust, 2014). Field results suggest common pipistrelle and noctule bats roost nearby and utilise the site as core foraging habitat, whilst Nathusius pipistrelle and soprano pipistrelle at least occasionally roost nearby. Natterer's bat was occasionally present at woodland habitats.

6.6.108 A peak in June common pipistrelle activity suggests the potential utilisation of the site area by a maternity colony, although no large numbers of bats were recorded to enter the site from a particular direction. One record of a common pipistrelle maternity roost was identified by the desk study over 1.7km south of the site.

6.6.109 A low number of noctule bats regularly utilise the open mosaic and grassland habitats on site as foraging habitat, a habitat that is relatively uncommon within the immediate locality, although it is acknowledged that without intervention, the open habitat mosaic would naturally become colonised by scrub and dense habitats over time.

6.6.110 Based on the habitat usage of the site by bats outlined in Chapter 6.5, the following comprises a summary of key important habitat areas on site for the remaining bat species on site:

- Lane to Peel Hall Farm
- Woodland edge & pond habitats

- Field boundary habitats
- Southern-most playing field

6.6.111 The habitats listed above are considered to be of **'District'** value for common pipistrelle bats, and the open fields are of **'Local'** value for noctule bats.

Likely scale of impacts in the absence of mitigation – Construction

6.6.112 Building demolition and removal of single tree with roosting potential. Loss of woodland edge habitats along the southern site boundary, fragmentation of key foraging corridors for common pipistrelle owing to road construction, and displacement of open habitats, of value to noctule, with residential development. Indirect impacts include artificial lighting illuminating habitats of value.

6.6.113 The potential impact magnitude is considered **'High'**, and the overall potential impact of site construction work on foraging bats in the absence of mitigation is **'Moderate'** (Local-District importance: High impact).

6.6.114 The overall potential impact of site construction work on roosting bats in the absence of mitigation is **Unknown**.

Required mitigation and residual impact

6.6.115 Further survey work is required to establish the presence/absence of roosting bats on site.

6.6.116 Suitable replacement roosting habitat for bats shall be provided in the form of bat boxes to be installed on existing trees and proposed dwellings adjacent to suitable foraging habitat.

6.6.117 Precautionary working methods in relation to removal/pruning of any trees with bat roost potential are included in the Bat Mitigation Strategy provided as **Appendix ECO 4**.

6.6.118 The loss of suitable woodland edge habitat for foraging pipistrelle will be partially compensated for by 14.6ha of habitat creation and/or enhancement as part of site plans, to include a mosaic of moderate to high quality habitats including species-rich grassland, scrub, wetland and woodland creation. A barrier will be created along the north of the site to buffer noise and light from the motorway, which will lessen the effects of existing light spill from the motorway on bats.

6.6.119 As open semi-natural habitat cannot be compensated for within the context of development, the potential impact magnitude with mitigation is considered **'High'** for noctule, and thus the overall potential impact of site construction work on foraging noctule bat with mitigation is **'Slight'** (Local importance: High impact).

6.6.120 The potential impact magnitude with mitigation is considered '**Minor**' for all other recorded bat species, and the overall potential impact of site construction work on other bats with mitigation is '**Slight**' (District importance: Minor impact).

6.6.121 The overall potential impact of site construction work on roosting bats in the absence of mitigation is **Unknown**.

Likely scale of impacts in the absence of mitigation – Operation

6.6.122 Artificial lighting such as streetlights could result in the loss and fragmentation of key commuting and foraging habitats for bats and deplete invertebrate numbers.

6.6.123 The potential impact magnitude is considered '**High**', and the overall potential impact of site operation on foraging bats in the absence of mitigation is '**Moderate**' (Local-District importance: High impact).

Required mitigation and residual impact

6.6.124 Unlit buffer zones measuring at least ten metres will be upheld along key foraging corridors, to ensure the retention of dark habitats for foraging pipistrelle bats. The bat method statement and lighting strategy provided as **Appendix ECO 4** will be implemented to minimize impacts to key foraging and commuting corridors for bats. In addition to sensitive lighting design, this includes strategic planting either side of the proposed breaks in the hedgerows, invertebrate attracting habitat creation and woodland edge habitat restoration.

6.6.125 The adjusted potential impact magnitude with mitigation is considered '**Minor**' for bat species, and the overall potential impact of site operation on bats with mitigation is '**Slight**' (District importance: Minor impact).

Hedgehog

Nature Conservation Value

6.6.126 No specific survey for hedgehog has been undertaken. The desk study found 16 records of hedgehog within 2km of the site, with the most recent being from 2017 and the nearest being 270m south-east of the site. Hedgehogs, and evidence of hedgehogs, was also sighted on three separate occasions during survey visits.

6.6.127 The site provides a variety of habitats where hedgehogs can feed and commute, with opportunities for refugia within areas of scrub, woodland and hedgerows. Whilst wetter parts of the site are likely to be avoided by hedgehogs, these do not necessarily prevent dispersal across the site due to seasonal drying. The site is also likely to provide relatively safe commuting corridors, free of vehicles, for hedgehogs in the local area. Brushing present due to households discarding garden waste also provide valuable refugia for hedgehogs along site boundaries. Site

habitats are therefore considered to be of high value to hedgehogs on site and within the local area.

6.6.128 The site is therefore considered likely to be of **'local'** value for hedgehog.

Likely scale of impacts in the absence of mitigation – construction

6.6.129 Habitat loss and direct impacts on hedgehog refugia.

6.6.130 The potential impact magnitude is considered **'High'**, and thus the overall potential impact of site construction work on hedgehog in the absence of mitigation is **'Slight'** (Local importance: High impact).

Required mitigation and residual impact

6.6.131 Retained linear woodland and hedgerow habitats will retain connectivity across the site for hedgehogs and hibernacula and log piles will be installed within woodland areas as additional refugia for hedgehog along with species rich grassland creation to enhance foraging opportunities.

6.6.132 To further minimise potential impacts upon hedgehogs throughout development work a Hedgehog Mitigation Strategy is provided as **Appendix ECO 5** which includes sensitive vegetation clearance methodologies and covering any excavations or open-ended pipes overnight.

6.6.133 The adjusted potential impact magnitude with mitigation is considered **'Minor'** for hedgehog and thus the overall potential impact of site construction work on hedgehog with mitigation is **'Non-significant'** (Local importance: Minor impact). No specific survey work is recommended.

Likely scale of impacts in the absence of mitigation – operation

6.6.134 Habitat fragmentation by garden/boundary fences and walls, increased disturbance from pedestrians and household pets, and increased mortality risks from roads.

6.6.135 The potential impact magnitude is considered **'High'**, and thus the overall potential impact of site operation on hedgehog in the absence of mitigation is **'Slight'** (Local importance: High impact).

Required mitigation and residual impact

6.6.136 As detailed in the Hedgehog Mitigation Strategy is provided as **Appendix ECO 5**, all boundary garden fences will be lifted or possess hedgehog access points to allow access between gardens for small mammals including hedgehog. Wildlife underpasses beneath roads, proposed at strategies locations as part of the GCN mitigation strategy (see **Appendix ECO 3**) are large enough for hedgehog to pass through.

6.6.137 The adjusted potential impact magnitude with mitigation is considered '**Minor**' for hedgehog and thus the overall potential impact of site construction work on hedgehog with mitigation is '**Non-significant**' (Local importance: Minor impact).

Brown hare

Nature Conservation Value

6.6.138 Records of brown hare were returned by the desk study within 2km of the site. No hares were witnessed throughout any of the multiple days spent surveying on site between 2012 and 2019, likely owing to the isolation of the site in addition to its increasing ratio of scrub to grassland. As such this species is concluded as likely absent.

Polecat

Nature Conservation Value

6.6.139 Evidence of pole cat was incidentally recorded on site, which is a priority species. Pole cat primarily predate upon rabbit, of which there is a healthy population of at the site.

6.6.140 The site is therefore considered likely to be of '**local**' value for pole cat.

Likely scale of impacts in the absence of mitigation

6.6.141 Habitat loss and direct impacts during construction.

6.6.142 The potential impact magnitude is considered '**High**' thus the overall impact is '**slight**' (local value: high impact).

Required mitigation and residual impact

6.6.143 The parameters plan implies ditch habitats are to be retained within corridors of habitat creation/enhancement, which is where the greatest concentration of rabbit activity was recorded.

6.6.144 Retention of hedgerows and linear wooded areas across the site.

6.6.145 All mitigation recommended for hedgehog within the appended mitigation strategy (Appendix **ECO 5**) should also inadvertently ensure protection and retained habitat connectivity for polecat.

6.6.146 The adjusted impact magnitude is considered '**Minor**' thus the overall impact is '**non-significant**'.

Herpetofauna

Amphibians

Nature Conservation Importance

6.6.147 The desk study search identified common frog, toad, smooth newt and great crested newt (GCN) records within the local area, all separated from the site by over 0.5km.

6.6.148 The site supports a small breeding population of GCN, a species that is fully protected under a combination of the Conservation of Habitats and Species Regulations 2017 (as amended) and the Wildlife and Countryside Act 1981 (as amended), however the amphibian assemblage does not currently qualify to be of county importance for amphibians according to the LWS selection criteria (Cheshire Wildlife Trust, 2014).

6.6.149 The site is considered to be of '**Local**' value for amphibian assemblages.

Likely scale of impacts in the absence of mitigation – Construction

6.6.150 One of the two ponds within which GCN were identified will be displaced by a proposed link road as part of the development. It is understood that the link road cannot be rerouted to avoid the pond. Destruction of a breeding pond is classed as 'high' scale impact in accordance with Great Crested Newt Mitigation Guidelines (English Nature, 2001). The remaining waterbodies on site will be retained, although indirect impacts of pollution and siltation may pose a risk of degradation (see para 6.6.43).

6.6.151 The mosaic of semi-natural habitats on site is considered of good potential value for GCN. Terrestrial habitat within 50m of breeding GCN ponds (immediate habitat) is of the greatest value and is used most frequently by GCN. Regular movement of GCN is likely to be restricted to habitats within 250m of a breeding pond (intermediate habitat 50-250m). Distant habitat (250m to 500m) may still be used by GCN, but not on a regular basis. The location of the GCN ponds, with 50m, 250m and 500m buffer zones, is indicated on Figure 1820-A4-01, **Appendix ECO 3**. Proposals will result in the permanent loss of approximately 0.6ha of terrestrial habitat within 50m of the GCN ponds and 13.92ha of terrestrial habitat within 250m of the GCN ponds.

6.6.152 The potential impact magnitude is considered '**High**', and the overall potential impact of site construction work on amphibians in the absence of mitigation is '**Slight**' (Local importance: High impact).

Required mitigation and residual impact

6.6.153 At the time of writing, the District Level Licensing Scheme for GCN is not yet available in Warrington.

6.6.154 A great crested newt mitigation strategy is outlined in **Appendix ECO 3**. To avoid the killing or injury of GCN, a European Protected Species Mitigation (EPSM) Licence will be required in order to trap and translocate amphibians from the proposed development area to newly created or enhanced receptor habitats, prior to works commencing. This mitigation strategy is detailed in **Appendix ECO 3**, which demonstrates how the Favourable Conservation Status of GCN, and other priority amphibians, can be maintained on site. Habitat creation/enhancement as part of the GCN EPSM licence will include hibernaculum installation, pond creation, woodland/scrub/species

rich grassland creation, to compensate for the loss of suitable terrestrial habitats. There would need to be a management plan for the created/enhanced habitats.

6.6.155 It should be noted that applying for a Natural England GCN Mitigation Licence requires GCN population size survey data from within the two years prior. Considering GCN are likely to have colonised the site from ponds within Peel Hall (the only other ponds with habitat connectivity to the site), these ponds will be surveyed to fully inform a Natural England EPSM licence application post-planning permission.

6.6.156 It is considered likely that with aquatic and terrestrial habitat creation and enhancement, the post-development site area will be able to maintain and potentially enlarge the existing small population of amphibians.

6.6.157 With mitigation, the potential impact magnitude with mitigation is considered '**Minor**' for amphibians, and the adjusted overall potential impact of site construction work on amphibian populations is '**Non significant**' (Local importance: Minor impact).

Likely scale of impacts in the absence of mitigation – Operational

6.6.158 Current proposals would cause habitat fragmentation and mortality risks to amphibians owing to the proposed link road passing between two clusters of ponds.

6.6.159 Newly created mitigation ponds could also be polluted via road run-off and/or disturbed by residents (see Paragraph 6.6.50).

6.6.160 The potential impact magnitude is considered '**High**', and the overall potential impact of site operation on great crested newt in the absence of mitigation is '**Slight**' (Local importance: High impact).

Required mitigation and residual impact

6.6.161 As specified in the GCN mitigation Strategy (**Appendix ECO 3**), the installation of permanent amphibian walls/fences and amphibian underpasses beneath the link road will minimise the mortality risk and fragmentary effects of the proposed link road. The strategy also advises scrub or post fencing around ponds with information signs. SUDS shall ensure ponds are protected from potential pollution sources.

6.6.162 The adjusted potential impact magnitude is considered '**Minor**', and the overall potential impact of site operation of great crested newt with mitigation is '**Not significant**' (Local importance: Minor impact).

Reptiles

Nature Conservation Value

6.6.163 One record of common lizard was returned by the desk study over 1km from the site area. No reptile surveys have been undertaken at the site to date. The overall mosaic structure of habitats on site was considered potentially suitable for reptiles in terms of foraging habitats, however given the history of the site as intensive agricultural land, current high levels of anthropogenic disturbance and isolated nature of the site from any other open semi-natural habitats, it is rendered highly unlikely that reptile species such as common lizard will have colonised the site. The motorway verge adjacent to the site was considered suboptimal for dispersing reptiles based on habitat structure, narrow width, northern facing slope aspect, and its termination at a slip road junction at the west of the site.

Birds

Breeding birds

Nature conservation value

6.6.164 Survey work has shown that site supports a range of common nesting birds, including several species that use the site for foraging but nest off site. These birds include seven species listed in Section 41 (NERC Act 2006), five of which are Red-listed in BoCC4, and seven Amber-listed in BoCC4.

6.6.165 The seven S41 bird species recorded during the 2019 survey include skylark, reed bunting and dunnock as breeding species, song thrush and bullfinch recorded in suitable habitat but no evidence of breeding, and starling and house sparrow present but no suitable nesting habitat present.

6.6.166 Six species recorded on the site are included in the Cheshire Local BAP. These include skylark, reed bunting, house sparrow, bullfinch, starling, and song thrush. Of those, only skylark and reed bunting were recorded as breeding species on site.

6.6.167 Using the criteria for selection it can be confirmed that the site fails to meet the required criteria for selection based upon the number of species recorded over the two survey visits.

6.6.168 Based upon the 2019 survey the bird fauna of the site is considered to be of '**local-district**' value, which concurs with the evaluation provided following surveys in 2013 and 2017.

Likely scale of impacts in the absence of mitigation – Construction

6.6.169 Loss of extensive areas of nesting/foraging habitat for a range of common birds of local-district value.

6.6.170 The potential impact magnitude is considered '**High**', and thus the overall potential impact of site construction work on breeding birds in the absence of mitigation is '**Moderate**' (Local-District importance: High impact).

Required mitigation and residual impact

6.6.171 In order to avoid the risk of directly impacting upon breeding birds, all trees and shrubs scheduled for removal must be felled outside of the breeding season i.e. within the period September-February inclusive.

6.6.172 All brash must be chipped on site or removed before the onset of the breeding season to prevent secondary colonisation by breeding birds.

6.6.173 All stands of common reed requiring removal must be mown to ground level during September-February inclusive to avoid impacting on breeding warblers.

6.6.174 If breeding birds are found, then an appropriately sized buffer zone for the species found must be implemented around the nest to prevent disturbance until the young have fledged and left the nest. The buffer zone must be fenced off temporarily until the nest is unoccupied. The vegetation containing the nest site can only be removed once the ecologist has declared the site clear of nesting birds.

6.6.175 To maintain and enhance the bird population at the site, over 7ha of bird habitat including woodland, hedgerows, ditches/streams and ponds will be retained. These areas will be enhanced further by over 7.6ha of tree/shrub planting, new ponds and the enhancement/creation of existing/new linear wildlife corridors/links.

6.6.176 The potential impact magnitude with mitigation is considered '**Moderate**' for breeding birds, and the adjusted overall potential impact of construction development work on breeding birds with mitigation is '**Moderate**' (Local-District importance: Moderate impact).

Likely scale of impacts in the absence of mitigation – Operation

6.6.177 Disturbance to nesting birds due to increased pedestrian use and general development, noise and lighting.

6.6.178 The potential impact magnitude is considered '**Minor**', and thus the overall potential impact of site operation of breeding birds in the absence of mitigation is '**Slight**' (Local-District importance: Minor impact).

Required mitigation and residual impact

6.6.179 To reduce anthropogenic disturbance, barriers and buffer zones either side of valuable breeding habitats will be implemented including 10 metre buffers of unlit habitat retention and creation along ditches, hedgerows and woodland.

6.6.180 The potential impact magnitude with mitigation is considered '**Non significant**' for breeding birds, and the overall potential impact of site operation on breeding birds with mitigation is '**Non significant**' (Local-District importance: Non-significant impact).

Barn Owl

Nature Conservation Value

6.6.181 No evidence of barn owl was identified on or adjacent to the site area by any surveys at the site between 2012 and 2019, and the presence of the M62 reduces the potential presence of this species to highly unlikely.

Required mitigation and residual impact

6.6.182 No mitigation is required for this species. In line with the Barn Owl Trust guidance, no provision for barn owls must be made due to the close proximity of the M62 which is a serious hazard to barn owl survival.

Invertebrates

Nature conservation importance

6.6.183 No structured invertebrate survey has been undertaken. Based on incidental observations alone, the site possesses a diverse assemblage of common species but does not currently qualify to be of county importance for butterflies, dragonflies/damselflies or other terrestrial/freshwater invertebrates according to the LWS selection criteria (Cheshire Wildlife Trust, 2014). However, a low number of priority species were identified and owing to extent of semi-natural habitats within the site, it is likely that the site is of '**local**' value to invertebrate populations.

6.6.184 One Section 41 priority invertebrate species was recorded on site: cinnabar moth, which is a relatively widespread species owing to its preferred larval plant being ragwort.

Likely scale of impacts in the absence of mitigation

6.6.185 Loss of seminatural habitats. The potential impact magnitude is considered '**High**' thus the overall impact is '**slight**'.

Required mitigation and residual impact

6.6.186 Over 14.6ha of invertebrate attracting habitats are to be created and/or enhanced as part of proposals.

6.6.187 The adjusted impact magnitude is considered '**Minor**' thus the overall impact is '**non-significant**'.

6.7 SUMMARY EVALUATION

6.7.1 Section 6.7 of this Addendum serves as an update to the original Environmental Statement and Addendum 1; therefore it replaces the corresponding sections of the original ES (Sections 6.15 & 6.16). Refer to original ES and Addendum 1 for August 2015 and August 2017 summary evaluations of ecological receptors and potential impacts.

6.7.2 A summary of nature conservation value of each of the ecological receptors is provided in **Table 6.10** below.

Table 6.10: Ecological Receptors – Nature Conservation Value

Ecological receptor	Associated Species and Habitats	Nature Conservation Value
Nature Conservation Sites		
Radley Plantation and Pond Local Wildlife Site	Broad-leaved woodland and ponds Off-site feature located immediately adjacent to the proposal site	County
Habitats		
Grassland	Coarse, improved, low diversity grassland communities and amenity grassland. No priority grassland NVC communities present.	Local
Woodland	Mature plantation woodland >100 years old Immature plantation woodland <30 years old No priority woodland NVC communities present.	Local
Ponds	Three on-site ponds with no significant plant communities	Site-Local
Stream & ditches	Modified channel in Spa Brook and ditches with no significant plant communities	Site-Local
Hedgerows	Native hedgerows. No ecologically 'important' hedgerows present.	Site-Local
Swamp	Dry stands of common reed	Site-local
Ruderal / fern	Tall ruderal herb and bracken	Site
Scrub	Secondary scrub	Site
Collective Evaluation of Habitats	Extensive mosaic of all semi-natural habitats listed above (Excluding Radley Plantation & Pond LWS)	Local-District
Species		
Badger	No evidence of occupation and very low possibility due to major landscape barrier effects	Not applicable
Water vole	No evidence of presence and very low possibility of colonisation owing to negligible-poor habitat conditions. Dense vegetation prevented full fingertip search of some sections of Spa Brook and ditches.	Not known
Roosting bats	Likely absence of bat roosts within trees and properties surveyed (all low potential value). One property on site, and three semi-detached properties directly attached to buildings on site could not be accessed to survey	Not known
Foraging/Commuting bats	Five species recorded. Woodland edge and field boundaries of importance to common pipistrelle, open field habitats of value to noctule.	Local-District
Hedgehog	Evidence of presence & extensive suitable habitat on site	Local

Brown Hare	No evidence of occupation and very low possibility due to major landscape barrier effects.	Not applicable
Polecat	Evidence of presence & extensive suitable habitat on site	Local
Amphibians	Small breeding populations of great crested newt, smooth newt and common toad present on site.	Local
Reptiles	No survey undertaken. Very low possibility of colonisation owing to site disturbance, isolation from surrounding suitable habitat by barriers and distance.	Not applicable
Breeding birds	Assemblages of birds that are typical of the local area including occasional ground nesting species	Local-District
Barn owl	No evidence of occupation and very low possibility due to major landscape barrier effects & lack of potential nest sites	Not applicable
Invertebrates	Assemblages of invertebrates typical of the local area. No significant invertebrate community compositions present.	Site-Local
Other species	No red data book species present, or potentially suitable habitat for species such as otter, red squirrel, white-clawed crayfish, dormouse.	Not applicable

6.7.3 The evaluation of the Ecological Receptors has shown that the development will affect areas of immature woodland, coarse low-diversity grassland, amenity grassland, hedgerows, tall ruderal herb, secondary scrub and secondary stands of dry reed bed. The individual habitats affected within the application boundary are at most of Site-Local value only, however the site is large and when evaluated collectively that habitats are considered of Local-District value.

6.7.4 In addition, the collective faunal interest of the site is of Local-District value.

6.7.5 The habitats within Radley Plantation and Pond Local Wildlife Site (off-site) are of county importance and will not be directly affected by proposals, however could be indirectly impacted in the absence of mitigation.

6.7.6 To provide an overview of the detailed impact assessment included in Section 6.6, a summary of predicted impacts of construction and site operation are summarised in **Tables 6.11 and 6.12**.

Table 6.11: Assessment of potential impacts – Construction

Ecological receptor	Nature Conservation Value	Predicted Impact & Reversibility	Overall impact (in the absence of mitigation)	Mitigation (Based on Parameters Plan and various appended species mitigation/protection strategies)	Residual predicted impact
Nature Conservation Sites					
Radley Plantation and Pond Local Wildlife Site	County	Owing to proximity, LWS at risk from disturbance during site works (light, noise, dust, disturbance, root damage, run-off, pollution, spread of invasive species). - Temporary effect Partial removal of semi-natural woodland edge buffer habitats + one nearby pond - Medium term effect.	Moderate	No built development within 15 metres of woodland. No residential curtilage within 25 metres of LWS. 10-20metre buffer zone of habitat creation around northern perimeter of LWS including pond creation. Construction Environmental Management Plan.	Slight
Habitats					
Grassland	Local	Loss of >30ha of low diversity grassland. Impact partially reversible through creation of species-rich grassland creation on site within ecological enhancement areas. Medium term effect.	Slight	14.6ha of habitat creation and/or enhancement on site to include open areas of species-rich grassland creation.	Non-significant
Woodland	Local	Loss of >3.3ha of immature woodland. Impact reversible through woodland creation on site within ecological enhancement areas. Medium term effect.	Slight	14.6ha of habitat creation on site to include minimum 3.3ha woodland creation. Enhancement and protection of retained woodland.	Non-significant
Ponds	Site-Local	One pond to be directly displaced. Impact reversible through pond creation and enhancement. Medium term effect.	Slight	Three new ponds (separate from SUDS systems) to be created on site. Enhancement of two retained ponds.	Non-significant
Stream & Ditches	Site-Local	Stream to be retained. Short sections to be impacted upon by road crossings. Impact reversible through habitat enhancement of stream corridor. Medium term effect.	Slight	10m buffer zones either side of Spa Brook and ditches. Habitat enhancement of stream corridor.	Non-significant

Hedgerows	Site-Local	Hedgerows to be largely retained. Short sections displaced by roads. Impact reversible through hedgerow planting and enhancement on site. Medium term effect.	Slight	Boundary hedgerows to be planted & retained hedgerow habitat to be protected by buffer zones and enhanced.	Not significant
Reedbed	Site-local	Loss of ~2ha secondary reedbed on abandoned farmland. Partial reversibility possible through provision of SUDS. Medium term effect	Slight	Provision of four attenuation ponds.	Slight
Ruderal / fern	Site	Loss of habitat. Impact partially reversible through relaxed management of scrub, hedgerow and woodland habitat edges. Medium term effect.	Not significant	Relaxed management of scrub, hedgerow and woodland habitat edges.	Not significant
Scrub	Site	Loss of >2ha of scrub habitat. Impact partially reversible through scrub habitat creation on site within ecological enhancement areas. Medium term effect.	Not significant	14.6ha of habitat creation and/or enhancement to including scrub habitats.	Not significant
Collective Evaluation of Habitats	Local-District	Very high impacts on a large area of semi-natural habitat. Impact partially reversible through habitat creation on site within ecological enhancement areas. Medium term effect. All retained habitats at risk from disturbance during site works (light, noise, dust, disturbance, root damage, run-off, pollution). Temporary effect	Moderate	14.6ha of habitat creation on site including species-rich grassland, scrub, wetland and woodland creation & invasive species removal Construction Environmental Management Plan to ensure protection of all retained habitats at risk from disturbance during site works (light, noise, dust, disturbance, root damage, run-off, pollution).	Moderate
Species					
Badger	Not applicable	No effect	Not applicable	Precautionary pre-commencement badger survey.	Not applicable

Water vole	Not known	Potential water vole habitats to be retained. Short sections of ditches and Spa Brook to be impacted upon by road crossings. Impacts avoidable through precautionary working methodologies during road construction & buffer zones of habitat creation and enhancement along all wet ditches and streams. Medium term effect.	Not known	See water vole protection plan (Appendix ECO 6), which includes precautionary working method statement and details of 10 metre buffer zones of habitat creation and enhancement along all wet ditches and streams.	Not known
Roosting bats	Not known	No roosts present within surveyed habitats on site. Demolition of properties that have not yet been accessed to inspect/survey for evidence of roosting bats. If bats found present by survey work, impact likely reversible through licenced bat mitigation to avoid harm to individual bats and create replacement roost features. No effect / temporary effect.	Not known	See bat mitigation strategy (Appendix ECO 4). If bats present, licenced bat mitigation will avoid harm to individual bats and create replacement roost features.	Not known
Foraging/Commuting bats	Local-District	Loss/modification of pipistrelle bat foraging routes along field boundaries. Impact avoidable through the establishment of buffer zones along key corridors, and habitat creation throughout the wider site area. Temporary effect	Moderate	See bat mitigation strategy (Appendix ECO 4), which specifies corridors of habitat creation and 10m buffer zones of unlit habitats along key habitat features e.g. ditches, woodland edge & hedgerow habitats.	Slight
Hedgehog & Polecat	Local	Loss/fragmentation of commuting, foraging and potential hibernation habitat. Impacts avoidance/reversible through sensitive site clearance and retaining/creating habitat corridors. Medium term effect.	Slight	See Hedgehog Mitigation Strategy (Appendix ECO 5), which includes sensitive site clearance methodologies and habitat retention/creation.	Non-significant
Amphibians	Local	Loss of one breeding pond and surrounding terrestrial habitats. Impacts reversible through pond creation, terrestrial habitat creation and amphibian translocation under a Natural England EPSM licence. Medium term effect.	Slight	See great crested newt mitigation strategy (Appendix ECO 3), which includes an overview of newt translocation requirements & methods and habitat creation specifications.	Non-significant
Breeding birds	Local-District	Loss of extensive areas of nesting/foraging habitat for a range of common birds.	Moderate	Sensitive timing of vegetation removal.	Moderate

		Impact partially reversible through habitat creation on site within ecological enhancement areas. Medium term effect.		14.6ha of habitat creation and/or enhancement on site to include woodland, hedgerows and ponds.	
Barn owl	Not applicable	No effect	Not applicable	No mitigation required	Not applicable
Invertebrates	Site-Local	Extensive habitat loss of semi-natural habitats Impact partially reversible through species-rich habitat creation. Medium term effect.	Slight	Species-rich habitat creation on site within ecological enhancement areas.	Non-significant
Other protected/priority species e.g. reptiles & brown hare	Not applicable	No effect	Not applicable	No mitigation required	Not applicable

Table 6.12: Assessment of potential impacts – Operation

Ecological receptor	Nature Conservation Value	Predicted Impact & Reversibility	Overall impact (in the absence of mitigation)	Mitigation	Residual predicted impact
Nature Conservation Sites					
Radley Plantation and Pond Local Wildlife Site	County	Increased public disturbance, although site already heavily utilised with no sensitive ground flora species	Not significant	Woodland enhancement and public awareness	Not significant
Habitats					
Grassland	Site-Local	Any losses of grassland have occurred during the construction phase. No operational effects predicted	Not applicable	No mitigation required	Not applicable
Woodland	Local	Increased public disturbance, although habitats currently significantly degraded owing to human activities.	Nil effect	Woodland enhancement through management. Proposed layout to ensure no rear gardens adjacent to woodland edges.	Not significant
Ponds	Site-Local	Pollution through site runoff & increased public disturbance.	Slight	SUDS system to prevent any pollution/siltation of waterbodies. Walkway barriers and information boards around ponds detailing sensitive pond ecology and advising dogs are kept out of water.	Not significant
Stream & ditches	Site-Local	Pollution through site runoff Impact avoidance through effective SUDS	Slight	SUDS system to prevent any pollution/siltation of watercourse	Not significant
Hedgerows	Site-Local	Increased public disturbance. Impact avoidable through buffer zones	Not significant	Provision of walkways outside of hedgerow protection buffer zones	Not significant
Swamp	Site-local	No operational effects	Not significant	-	Not significant
Ruderal / fern	Site	No operational effects	Not significant	-	Not significant
Scrub	Site	No operational effects	Not significant	-	Not significant
Collective Evaluation of Habitats	Local-District	No operational effects	Not significant	-	Not significant
Species					

Badger	Not applicable	No effect	Not applicable	No mitigation required	Not applicable
Water vole	Not known	Pollution through site runoff Impact avoidance through effective SUDS	Not known	10 metre buffer protection zones to be maintained. SUDS system to prevent any pollution/siltation of watercourse	Non-significant
Roosting bats	Not known	No operational effects	Not applicable	Bat box installation	Not applicable
Foraging/Commuting bats	District	Impact on bat foraging areas through the site lighting. Impact avoidable through an appropriate lighting plan.	Moderate	See bat mitigation strategy (Appendix ECO 4), which specifies corridors of habitat creation and 10m buffer zones of unlit habitats along key habitat features e.g. ditches, woodland edge & hedgerow habitats.	Slight
Hedgehog & Polecat	Likely local	Fragmentation of commuting and foraging habitat by garden fences and roads. Impacts avoidable through provision of wildlife underpasses.	Slight	See Hedgehog Mitigation Strategy (Appendix ECO 5), which includes wildlife underpasses suitable for small mammals/herptiles and garden fence design.	Non-significant
Amphibians	Local	Pollution through site runoff & increased public disturbance. Impact avoidance through effective SUDS & raising environmental awareness of residents Roads between pond clusters present permanent dispersal barrier and significant risk of mortality.	Slight	See great crested newt mitigation strategy (Appendix ECO 3), which includes permanent mitigation features such as permanent GCN fencing along link road between ponds, amphibian underpasses at key locations & pond protection.	Non-significant
Breeding birds	Local-District	Disturbance to nesting birds due to increased pedestrian use of site and general development. Partially reversible through provision of barriers and buffer zones.	Slight	Walkways outside of any vegetation buffer zones with barriers.	Non-significant
Barn owl	Not applicable	No effect	Not applicable	No mitigation required.	Not applicable
Invertebrates	Site-Local	No effect	Not applicable	No mitigation required	Not applicable
Other protected/priority species e.g. reptiles & brown hare	Not applicable	No effect	Not applicable	No mitigation required	Not applicable

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7.0 HYDROLOGY, DRAINAGE AND FLOOD RISK ASSESSMENT

- 7.1 This section considers the risk of flooding at the application site and assesses any impact to the surrounding catchment resulting from proposed developments. This document sets out the design principles and indicative detail for surface and foul water drainage to serve the proposed development.

7.2 Site Description

- 7.2.1 The topographical survey confirms that the site falls from east to west with levels ranging from approximately 10.32m AOD to the west and 17.97m AOD to the east. A high point is located to the north east with levels at approximately 20.69m AOD. Refer to topographical survey within **Volume 3 Appendix HYD 1**. A desk top ground study was prepared for the site by Environmental Management Solution Limited. Refer to **Volume 3 Appendix HYD 1**. According to this study the application site is underlain by Glaciofluvial deposits comprising sand and gravel. The British Geological Survey (BGS) records indicate that the bedrock geology at the development is formed of Chester Pebble Beds Formation which comprises sandstone. The BGS borehole logs confirm that clay gravel and sand form the superficial strata at the application site.

7.2.2 Existing Drainage Networks and Water Supply

Sewer maps provided by United Utilities confirm an existing clean water supply pipe runs adjacent to Peel Cottage Lane and runs to Peel Hall. According to this mapping there are also existing public sewers crossing the western end of the application site. Existing foul and surface water sewers are located to the east at Mill Lane and to the west within the existing residential development at Poplars Avenue. Refer to **Volume 3 Appendix HYD 2**.

7.2.3 River and Watercourses

The Environment Agency (EA) flood maps and topographical surveys confirm that there are a series of minor watercourses, including the Spa Brook, located within the application boundary. The nearest major watercourse to the development is the Cinnamon Brook which is located approximately 125m to the east of the site.

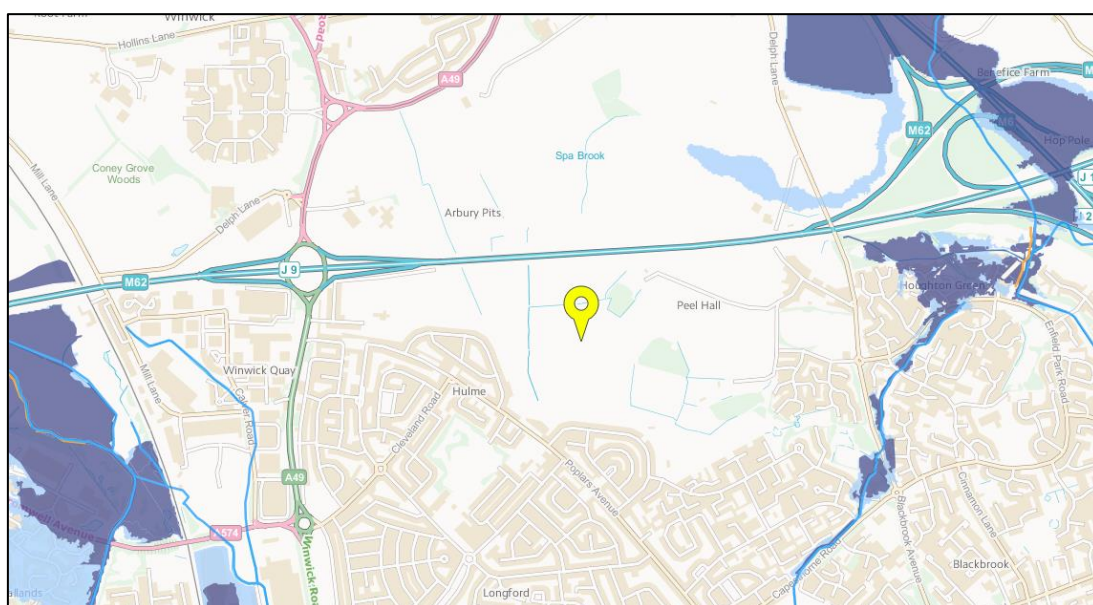
7.3 Flood Risk

- 7.3.1 The Environment Agency (EA) Indicative Flood map in **Figure 1** below, confirms that the site is located in Flood Zone 1 and is not at risk of fluvial flooding. Areas located in Flood Zone 1 have less than 0.1% chance of flooding in any given year. Only a 1 in 1000 year flood event puts this

site at risk from fluvial and tidal events. The NPPF classes residential development as 'More Vulnerable' to the risk of flooding.

- 7.3.2 The topographic survey shows that the site falls from east to west. The application site is bounded by the M62 to the north, existing residential development at Mill Lane and recreational grounds to the east. Existing residential development at Birch Avenue and Newhaven Road is located to the west and existing residential development at Windermere and Woodside Farm is located to the south.

Figure 1 – EA indicative Flood Map – Peel Hall Farm



Warrington Borough Council Strategic Flood Risk Assessment (SFRA) and Flood Risk Management Strategy (FRMS)

- 7.3.3 A Strategic Flood Risk Assessment (SFRA) was prepared by Jeremy Benn Associates (JBA) in 2011 for Warrington Borough Council. A Flood Risk Management Strategy was also prepared by the Environment Agency (EA) in March 2011, in which sub-catchments have been identified as areas at risk and how flooding can be managed. The application site is not located within any of these areas and is not identified within the SFRA as being at risk of flooding.

7.3.4 Tidal and Fluvial Flooding

The SFRA confirms that the main sources of flooding in Warrington are the River Mersey and its 5 key tributaries (Sankey, Padgate, Spittle, Penketh and Whittle Brooks). The development is not within the vicinity of any of these sources. According to the EA map the nearest major watercourse is the Cinnamon Brook, this is approximately 125m from the development. There are

minor watercourses and ponds located within the application boundary however according to the EA map these do not pose a risk to the site.

7.3.5 Groundwater Flooding

The EA indicative flood map confirms that the application site is located within a Zone 3 groundwater source protection zone. This is described by the EA as:

'Defined as the area around a source within which all groundwater recharge is presumed to be discharged at the source. In confined aquifers, the source catchment may be displaced some distance from the source. For heavily exploited aquifers, the final Source Catchment Protection Zone can be defined as the whole aquifer recharge area where the ratio of groundwater abstraction to aquifer recharge (average recharge multiplied by outcrop area) is >0.75. There is still the need to define individual source protection areas to assist operators in catchment management;'

7.3.6 The Envirocheck report within the desk top study for Phase 1 of the development, that the drinking water source itself is located approximately 560m to the north of the site. The sites groundwater is also assumed to be moderately to highly susceptible to groundwater contamination.

7.3.7 According to the EA groundwater maps the application site is underlain by secondary A aquifers, which are described as:

Secondary A - permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

7.3.8 Overland Flooding

As previously mentioned the site falls from east to west and bounded by the M62 to the north and existing residential development at Mill Lane to the east which will act as a cut off preventing overland flow from reaching the development. Due to topography, any overland flow from the south and west will flow away from the development. Surface water from the development will be managed on-site and will be restricted to Greenfield run-off rate; therefore the risk of overland flooding causing by the development is negligible.

7.3.9 Sewer Flooding

The United Utilities DG5 records are provided within the SFRA. These records show a data set of all properties that have been previously flooded by a drainage system. The application site is not highlighted on this plan as being at risk of flooding from the existing sewerage network and therefore flood risk due to sewers is considered to be low. Areas to the north east and south are

also highlighted as low risk and the area to the west is considered as medium risk. Refer to **Volume 3 Appendix HYD 3**.

7.3.10 Surface Water Flooding

According to the EA flood maps, the application site is at low risk of surface water flooding. According to the SFRA there are certain locations within Warrington that are at risk of surface water flooding. The critical drainage map within the SFRA confirms that development does not fall within a critical drainage area. However land to the east south and west are within critical drainage areas, according to the SFRA there are a number of culverts through the area which if unmaintained could increase flood risk. Surface Water from the development will be managed on-site via attenuation and will be restricted to the existing run-off rate.

Figure a – EA Indicative Surface Water Flood Risk Map – Peel Hall



7.3.11 Reservoir Flooding

The EA flood maps confirm that the site is not at risk from flooding from reservoirs. Refer to **HYD 3**.

7.4 Proposed Surface Water Drainage Strategy

7.4.1 Existing Surface Water Drainage

The United Utilities maps confirm there are no public surface water sewers crossing the development site. An existing domestic kennels and dwelling are located within the development but do not form part of the application boundary. The site is currently Greenfield; it is proposed that discharge from the proposed development will be restricted to the existing QBAR as

calculated using the HR Wallingford IH124 Greenfield run-off calculation. QBAR has been calculated as 334.8 l/s, refer to **Volume 3 Appendix HYD 4**.

7.4.2 **Proposed Surface Water Drainage Strategy**

The hierarchy of surface water disposal stated within The Building Regulations approved document Part H is as follows:

- An adequate soakaway/infiltration system
- A watercourse
- A sewer

The proposed options of surface water discharge include the following:

- SuDS

7.4.3 It is proposed that surface water from the development is restricted to the QBAR rate of 334.8l/s

7.4.4 The desk top study prepared by Environmental Management Solution Ltd indicates that the superficial strata at the site is formed from gravel and sand, therefore infiltration drainage may be feasible at the development, however the site is also located within a groundwater source protection zone and therefore discussions with Environment Agency as the design progresses will need to be undertaken in order to agree what areas could be utilised for soakaway drainage but at the same time protect the groundwater from contamination.

7.4.5 Due to this reason and to avoid causing any contamination to groundwater soakaways we would need to make sure areas that go to a soakaway are areas that do not generate or have a risk of generating contamination to groundwater.

7.4.6 **Watercourses**

There are existing ponds and minor watercourses located within the application site including the Spa Brook. It is proposed that surface water from the development will discharge to these minor watercourses at the restricted run off rate. The Spa Brook is located to the west of the application site and appears to be culverted to the rear of the existing properties at Poplars Avenue. United Utilities records suggest that this drains to Mill Brook behind the Alban Retail Park. It is assumed that flows from the site restricted to the Greenfield rate will be able to discharge into this surface water system with a system of onsite attenuation as proposed. Further modeling of this pipe may be requested.

7.4.7 In addition to Spa Brook, there appears to be a drainage ditch located within the application boundary. This ditch is connected to Dallam Brook via a large diameter culvert which runs via Densham Avenue and Northway.

7.4.8 The area to the north west of the site which will comprise the employment space and residential units falls to the North West. It is proposed that surface water from the development will discharge to the watercourses at the restricted rate, attenuation will be used to achieve this. Discharge to this existing drainage ditches and watercourse will require consent from the Local Authority and may require discharge consent.

7.4.9 The QBAR for the whole development has been calculated as 334.8 l/s. This will be pro rata'd per sub-catchment and the storage requirement will be based on this restricted rate. These areas have been broken down as follows:

Pond Reference	Sub-catchment Area (ha)	Percentage of Sub-catchment (%)	QBAR for sub-catchment (l/s)	55 % Impermeable Area (ha)	Volume requirement – Q100+30% (m ³)
A	4.336	6.81	22.80	2.38	1373
B	5.26	8.27	27.68	2.89	1668
C	5.48	8.61	28.83	3.01	1736
D	5.64	8.87	29.69	3.1	1788
E	4	6.29	21.06	2.2	1270
F	2.91	4.57	15.32	1.6	924
G	0.83	1.31	4.39	0.45	266
H	4.6	7.23	24.22	2.53	1459
I	2.92	3.97	13.32	1.61	930
J	4.08	6.4	21.48	2.24	1291
K	2.54	4	13.42	1.40	808

7.4.10 Water Quality

Due to the application site being located within a groundwater protection zone, groundwater quality needs to be controlled to limit any contamination from the development. It is proposed that a two stage treatment will be provided, initially using lined permeable paving with this discharging

to the designated ponds and secondly via the ponds themselves. The commercial areas in particular will require use of permeable paving and oil separators where appropriate.

7.4.11 **Attenuation Features**

Potential use of SuDS have been considered for the attenuation of surface water on-site and are listed below, infiltration drainage cannot be used at the site due to the development being located within in groundwater protection zone. Water quality has also been considered when proposing the following attenuation features:

7.4.12 **Attenuation Ponds**

It is proposed that surface water from the development will discharge to attenuation ponds which in turn will discharge to the existing watercourses and ditches within the site. The discharge into these watercourses will be restricted to QBAR rates listed above in **Table 1**.

7.4.13 **Permeable Paving**

Further attenuation can be provided using permeable paving for private drive areas. Permeable paving would be beneficial as it allows for a reduction of the occurrence of runoff flooding. Permeable paving would also improve water quality by filtration through the pavement as they are an effective initial method of removing total suspended solids, heavy metals and hydrocarbons from runoff.

Section 22 Response

- 7.4.14 Given the outline nature of the application, it is not considered that a full Water Framework Directive (WFD) assessment is necessary and that it should be conditioned as part of the outline planning permission to be undertaken as part of a reserved matters application, where a more detailed drainage strategy will be completed.
- 7.4.15 The development proposals, in tandem with the surface water and foul water management strategies, will be tailored throughout the detailed design process to ensure that there is no adverse impact on water and ground water as a result of the development. Additionally, given the outline nature of the application, information required to complete a full WFD assessment is not available, and as such it is not considered necessary to undertake the WFD assessment at this stage.
- 7.4.16 However, for the purposes of ensuring a complete response to the matters raised by the Planning Inspectorate, a preliminary WFD assessment has been undertaken (document reference: 1506-45/TN/03, dated November 2017) and is contained within **Volume 3 Appendix HYD 5**.

7.5 Proposed Foul Water Drainage Strategy

Existing Foul Flow

- 7.5.1 An existing dwelling and kennels are located within the site but these do not form part of the application boundary, therefore the site is considered to be greenfield.

Proposed Foul Flow

- 7.5.2 The proposed development will comprise up to circa 1300 new residential dwellings, commercial areas and a school. Based upon Sewers for Adoption 7th Edition and British Water Flows and Loads the foul flow has been calculated as: 64.52 l/s. This flow has been based on the following assumptions, refer to Foul Flow calculations within **Volume 3 Appendix HYD 5**:

Commercial Area: Employment zone comprising approximately 150 members of staff and Supermarket comprising 80 members of staff

School: Comprising approximately 180 pupils and 25 members of staff

Retirement Housing: Comprising approximately 60 residents

7.5.3 Proposed Foul Water Drainage Strategy

Foul networks are located to the east at Mill Lane, to the west at Windermere Lane, and to the west within the site boundary. Any sewers located within the application site will require easements either side. The sewer sizes have been confirmed as a maximum of 225mm on the existing site so assuming that these are laid at no deeper than 3m cover to invert then a 3m easement will need to be provided for these pipes in line with the statutory requirement defined by the statutory undertaker. United Utilities have not given a preference for a point of connection but have no objection with foul flows communicating with their sewers, preferably via a gravity connection. Refer to correspondence within **Volume 3 Appendix HYD 5**.

7.6 Conclusions and Recommendations

- 7.6.1 This report concludes that the development is not at risk of fluvial, tidal, overland or groundwater flooding and will not increase flooding to surrounding catchments.
- 7.6.2 It is proposed that surface water from the development will be restricted to the existing Greenfield run-off rate of 334.8l/s.
- 7.6.3 The site is located within a groundwater source protection zone and therefore to prevent any contamination, surface water infiltration drainage will need to be subject to Environment Agency confirmation. Areas contributing to soakaways will need to be carefully designed and selected so they do not pose any risk of contamination to groundwater

- 7.6.4 It is proposed that surface water from the development will discharge to the watercourses at the restricted rate; attenuation will be used to achieve this. Discharge to this existing drainage ditches and watercourse will require consent from the Local Authority and may require discharge consent.
- 7.6.5 CCTV has been carried out to determine the nature and condition of onsite drainage features.
- 7.6.6 Due to the application site being located within a groundwater protection zone, groundwater quality needs to be controlled to limit any contamination from the development.
- 7.6.7 United Utilities have not given a preference for a point of connection but have no objection with foul flows communicating with their sewers, preferably via a gravity connection.
- 7.6.8 Foul capacity has been confirmed at a rate of 64.52l/s.
- 7.6.9 A minimum of 3m easements are required for all existing on site drainage owned by United Utilities in line with the statutory requirement.
- 7.6.10 A preliminary WFD assessment has been undertaken which concludes that the proposed development is not considered to have an impact on the current ecological and chemical quality of the local rivers and watercourses.

8.0 LANDSCAPE AND VISUAL AMENITY IMPACT ASSESSMENT

Introduction

- 8.1 This section provides a systematic assessment of the potential effects of the proposed development on landscape resources and character and the visual amenity of the site, its surroundings and the people who use it. This update as part of addendum 2 considers the changes to the scheme and any changes to the impact on landscape.

Prediction Methodology

Potential impacts

- 8.2 The potential landscape and visual effects of development can include:
- The direct loss of the elements of the existing physical landscape and the introduction of new landscape features;
 - Changes to the landscape character of the site, its surroundings, and spatial organisation;
- And
- Changes in respect of visual effects and amenity for visual receptors.

8.3 Information Sources

Desk top study

- 8.3.1 A review of National, Regional and Local Planning policies related to landscape and the environment generally was undertaken and in addition landscape policies specific to the site and its environs were identified.
- 8.3.2 A search for landscape character assessments on both a regional and local basis was made and the relevant teams working within the Borough Council were contacted.
- 8.3.3 Mapping on both local and a wider area was obtained in order to evaluate topography, vegetation and land use and to identify public rights of way and potential viewpoints into the site. Aerial Photographs were also obtained to supplement the mapping. The land-use both within and adjacent to the site was plotted from Ordnance Survey maps and air photographs.

- 8.3.4 This assessment should be read in conjunction with the following drawings produced by Appletons:

Appendix APP 6 Parameters Plan.

The Parameters Plan has been replaced by **Appendix APP 6** (drawing no. 1820_35) to include vertical parameters. An additional drawing showing a north-south cross section has been prepared and is included in the **Appendix APP 14** (drawing no. 1820_31).

Appendix LND 10 Landscape Masterplan

This drawing is contained in **Appendix LND10**.

Field Survey

- 8.3.5 Field studies were undertaken in July 2015, May 2016 and August 2019 to verify and supplement information. A photographic survey of views into the site and its surroundings was undertaken using a camera with a 50mm focal length, which is that closest to the human eye.
- 8.3.6 The site was walked to establish land use and landscape characteristics. Footpaths were walked to identify views into, out of and through the site. The local road network was driven and local settlements visited to identify other potential viewpoints, and the character of the adjacent landscape.
- 8.3.7 Principal representative public vantage points were identified, adjacent land-uses verified, viewpoints towards and into the site recorded (public and potential private) and a zone of visual influence (ZVI) determined. 'Sensitive' receptors were identified.

8.4 Methodology

- 8.4.1 The following summary has been based on the detailed methodology (GLVIA 3 2013) as detailed in **Volume 3 Appendix LND 6**.
- 8.4.2 The assessment was undertaken in accordance with established and accepted methodologies including those within the 'Guidance for Landscape and Visual Impact Assessment', third edition, published April 2013 jointly by The Landscape Institute and The Institute of Environmental Management and Assessment.

- 8.4.3 The 'baseline' conditions of the site and surrounding area were established by both desk top-top studies and field surveys. This assessment has been based on the baseline conditions at the time the surveys were undertaken.
- 8.4.4 The assessment covers two phases, firstly assessing the effects during construction, which effectively views the development at its transient phase. Secondly, the effect of the development is assessed after completion and when the site is operational. Within each of these phases the potential effects and mitigation have been assessed.
- 8.4.5 Predictions and assessments of effects were made in the context of the proposed development set out by Appletons drawings **Appendix APP 7 and LND 10**.
- 8.4.6 Visual impact analysis was conducted through the assessment of photographic surveys, field study, mapping and establishment of a Zone of Visual Influence of the proposed scheme.

8.5 Significance of Impacts

- 8.5.1 The significance of impacts has been determined by both the previous experience of the authors and other examples as set out in 'The Guidelines for Landscape and Visual Impact Assessment'.
- 8.5.2 An assessment of the significance of potential impacts of the proposed development was made using the following criteria. Full details of Methodology and Criteria Tables are supplied in **Volume 3 Appendix LND 6 and 7**.

DESCRIPTORS OF THE SIGNIFICANCE OF LANDSCAPE EFFECTS CATEGORIES

Significance Category	Typical Descriptors of Effect
Major beneficial (positive) effect	<p>The project would provide an opportunity to enhance the landscape because:</p> <ul style="list-style-type: none"> • It fits very well with the scale, landform, pattern and appearance of the landscape. • There is potential, through mitigation or design, to create or enable the restoration of characteristic features and elements partially lost or diminished as the result of changes resulting from inappropriate management or development. • It enables a sense of place to be enhanced through good design and/or well designed mitigation measures. • It facilitates national and local policy objectives to regenerate degraded countryside or urban areas.
Moderate beneficial (positive) effect	<p>The project would provide an opportunity to enhance the landscape because:</p> <ul style="list-style-type: none"> • It fits very well with the scale, landform and pattern of the landscape. • There is potential, through mitigation, to enable the restoration of characteristic features and elements, partially lost or diminished as the result of changes resulting from intensive farming or inappropriate development. • It will enable a sense of place to be restored or enhanced through beneficial mitigation and sensitive design. • It furthers national and local policy objectives to regenerate degraded countryside or urban areas.
Minor beneficial (positive) effect	<p>The project would:</p> <ul style="list-style-type: none"> • Fit well with the scale, landform and pattern of the landscape by maintaining or enhancing the existing character. • Enable some sense of place to be restored through well designed mitigation measure. • Maintain or enhance existing landscape character. • Avoid conflict with national and local policy towards protection of the countryside or protection/enhancement of urban areas.
Negligible effect	<p>The project would:</p> <ul style="list-style-type: none"> • Complement the scale, landform and pattern of the landscape. • Incorporate measure for mitigation to ensure that the project will blend in well with surrounding landscape features and elements. • Avoid having an adverse effect on the current level of tranquillity of the landscape. • Maintain existing landscape character and enable a sense of place to be retained through beneficial and sensitive design. • Avoid conflict with national and local policy towards protection of the countryside or protection/enhancement of urban areas.
Minor adverse (negative) effect	<p>The project would:</p> <ul style="list-style-type: none"> • Not quite fit the landform, scale and pattern of the landscape. • Be unable to be completely mitigated because of the nature of the project itself or the character of the landscape. • Affect an area of recognized landscape quality. • Conflict with local authority policies for protecting the local character of the countryside of the protection/enhancement of urban environments.
Moderate adverse (negative) effect	<p>The project would:</p> <ul style="list-style-type: none"> • Be out of scale with the landscape or conflict with the local pattern and landform. • Be unable to be fully mitigated (i.e. mitigation will not prevent the scheme from damaging the landscape in the longer term). • Have an adverse impact on a landscape of recognized quality or on vulnerable and important character feature or elements. • Be in conflict with national and local policies to protect open land and nationally recognized countryside, or to protect/enhance the urban environment.
Major adverse (negative) effect	<p>The project would be very damaging to the landscape because it:</p> <ul style="list-style-type: none"> • Is at considerable variance with the landform, scale, pattern and appearance of the landscape. • Is likely to degrade, diminish or even destroy the integrity of a range of characteristic features and elements. • Will be substantially damaging to a high quality or highly valued landscape, causing it to change and be considerably diminished in quality. • Cannot be adequately mitigated. • Is in serious conflict with national and local policy for the protection of nationally recognized countryside or for the protection/enhancement of the urban environment.

DESCRIPTORS OF THE SIGNIFICANCE OF VISUAL EFFECT CATEGORIES

Significance	Typical Criteria
Major Beneficial	The project would lead to a major improvement in a view from a highly sensitive receptor.
Moderate Beneficial	The proposals would cause obvious improvement to a view from a moderately sensitive receptor, or perceptible improvement to a view from a more sensitive receptor.
Minor Beneficial	The project would cause limited improvement to a view from a receptor of medium sensitivity, but would still be a noticeable element within the view, or would cause greater improvement to a view from a receptor of low sensitivity.
Negligible Beneficial	The project would not significantly change the view but would still be discernible, and the effect would be beneficial.
Neutral/Non	No change in the view.
Negligible Adverse	The project would not significantly change the view but would still be discernible, and the effect would be adverse.
Minor Adverse	The project would cause limited deterioration to a view from a receptor of medium sensitivity, or cause greater deterioration to a view from a receptor of low sensitivity, and would be a noticeable element in the view.
Moderate Adverse	The project would cause obvious deterioration to a view from a moderately sensitive receptor, or perceptible damage to a view from a more sensitive receptor.
Major Adverse	The project would cause major deterioration to a view from a highly sensitive receptor, and would constitute a major discordant or dominant element in the view.

Baseline Environment

8.6 Location and Context

8.6.1 The proposed site is located in north Warrington 1.2 kilometers from the southern outskirts of Winwick village to the north of the town centre. Other settlements are Newton Le Willows, 5.0 kilometres to the North West, Padgate, 2.5 kilometers to the South East and Birchwood at 4 kilometres due East. A location and context Plan forms **Volume 3 Appendix APP 1** and an aerial photograph of the Site forms **Volume 3 Appendix APP 2**.

8.6.2 The site lies to the south of the M62, which is the main route from Manchester to Liverpool with links to the M6, M60 and M57. To the west is the A49 which is a key arterial route running northwards out of Warrington linking to the M62 and Winwick village beyond.

8.6.3 To the north of the site beyond the M62 is open farmland with the settlement of Winwick located beyond to the North West. To the East and West the predominantly land use is residential, as is the south, though with areas of open space and playing fields.

8.7 The Physical Characteristics of the Site

The characteristics of the Site are indicated on **Volume 3 Appendix LND 2**. The site itself is generally a flat plane of former farmland. A detailed description of the site is given at section 3 of this assessment.

8.8 Landscape Designations

No statutory or non-statutory landscape designations apply to the site or its surroundings.

8.9 Landscape Character Assessment

The following text sets out the baseline information available in respect of Landscape Character Assessments undertaken by various bodies and the authors' commentary on the baseline situation of the site. Assessment and analysis of the potential Landscape Character impacts are contained within subsequent sections of this report.

8.10 Regional Assessment – Landscape Character Areas

The 'Character of England' is a nationwide assessment of landscape character prepared by the then Countryside Commission in 1998. The proposed site falls within the National Landscape Character Area 60, the Mersey Valley (see **Volume 3 Appendix LND 8**). The broad description within the National Assessment states that:

- *A very distinctive river valley landscape focusing on the Mersey, its estuary and associated tributaries and waterways, although the Mersey itself is often obscured.*

- *A range of landscape types, including salt marshes around the estuary, remnants of semi-natural mosslands and pockets of basin peats towards Manchester, with the broad river valley in between.*
- *Broad linear valley with large scale, open, predominantly flat farmland supporting substantial bands of mixed agriculture.*
- *Trees and woodland are scarce and are mainly associated with settlements.*
- *Field pattern is regular and large scale, often defined by degraded hedgerows.*
- *Large scale highly visible industrial development, particularly at the river crossings of Runcorn, Widnes and Warrington.*
- *The valley has a dense communication network with motorways, roads, railways and canals producing a large number of bridge crossings. Power lines are also prominent along this corridor.*
- *Distinctive cultural landscape with major towns of Runcorn, Warrington and Widnes having much in common in relation to past and existing development pressures.*

8.11 Local Assessment

Warrington Borough Council published a more detailed landscape assessment in 2007. In that study the site falls within character area Type 1: Undulating Enclosed Farmland 1C - Winwick, Culcheth, Glazebrook and Rixton. Section 1C of the assessment is located in **Volume 3 Appendix LND 9**. In general terms key characteristics which can be identified on site include:

- *Medium to large-scale mainly arable fields*
- *Lack of hedgerow trees*
- *Hedgerows between fields often fragmented*
- *Deciduous wooded backdrops*

8.12 Site Character Assessment

8.12.1 The landscape character of the site is generally consistent with the Warrington BC assessment. It is currently unused open land previously used for agriculture though this use has now ceased. The land includes a small plantation of trees and unmanaged hedgerows, though the land is generally open in character. A network of ditches is present on the site. Within the site three distinct sub-zones can be identified as follows:

8.12.2 Western Zone

The land to the west of the site is distinctly urban fringe in character strongly influenced by the adjacent urban development. The previous farmland appears neglected and there is little vegetation apart from unmanaged grassland.

8.12.3 *Central Zone*

The central area of the site is more open. It is heavily influenced both in visual terms and audibly by the M62 motorway which is at grade at this point. The motorway is illuminated and the lighting columns and traffic using the motorway dominate.

8.12.4 *Eastern Zone*

The eastern zone is by contrast with the other two, smaller in scale due to the size of redundant field parcels and enclosure given by tree and hedge cover. The motorway is in cutting at that point and traffic noise and visual intrusion is less obvious. The adjacent residential areas influence the character of the site at that point.

8.13 **The Character of Adjacent Landscape**

The character of land immediately to the north beyond the M62 is semi-rural farmland influenced by urban features including the settlement of Winwick at a distance of 1.2 kilometres and the motorway itself, which is illuminated and at grade with the adjacent landform. To the south, west and east the predominant land use is residential though with areas of public open space.

8.14 **The Impact of the Proposed Development on Landscape Character**

The character of the Site itself would obviously change significantly from open farmland to predominantly residential development. In terms of the impact on the character of land to the north this is considered to be negligible due to the lack of inter-visibility and the dominant presence of the M62 motorway which forms a visual and physical barrier between the two. The impact on the character of the existing development to the east, south and west is also considered to be negligible since again the site is not prominent in views from the public domain and in any event the proposed land use would be similar.

8.15 **Visual Amenity and Prominence**

Topography and Existing Screening Features

- 8.15.1 The topographical survey shows an average level of approximately 25m AOD throughout the site. The lowest part of the site is in the south west corner where the levels here are generally 10m AOD. The highest part of the site is in the north east portion of the site, with a level of 28m AOD. Overall, however the land appears relatively flat, particularly in the central area where the site is at grade with the M62 Motorway. To the west and east of the site the motorway is in cutting and this provides screening from views further north.

Zone of Visual Influence of the site

- 8.15.2 Based on desk top mapping and confirmed by field study a predicted zone of visual influence (ZVI) of the site has been prepared. The ZVI is shown on **Volume 3 Appendix LND 3**. The ZVI is indicative of the part of the landscape from which views of the site might be gained. It does not imply that views would be possible from all points within the area delineated, nor does it indicate that all the development might be seen. As can be seen from the ZVI due to topography and context the site's visual prominence is assessed as **moderate to minor**.

8.16 Identification of Important Features and Potential Sensitive Receptors

- 8.16.1 The above assessment of the baseline conditions has highlighted the following as important features and sensitive features.

Landscape Features

- 8.16.2 The existing landscape elements of the site and its ecological value are described in Section 6 of this report. In summary the major vegetation type is unmanaged grassland and former arable land. Other features consist of ditches, remnant and grown out hedgerows and isolated pockets of woodland. There are no significant landscape or architectural features present.

Potential Sensitive Receptors

- 8.16.3 From the baseline studies and identification of the (baseline) ZVI the following sensitive receptors are identified. Their inclusion does not mean that an adverse impact may occur as a result of the proposals but rather that any potential for impacts to occur have been assessed due to their sensitivity.
- Footpaths; it is considered that users of footpath are sensitive, as changes in views have the potential to be more perceivable. Any views gained from these locations would be of a slow passing nature and more sensitive than vehicle users who are travelling at speed.
 - Private properties in close proximity to the site may gain views of a static nature and therefore changes would be more readily perceivable, however any assessment in this regard must consider that there is no right to a view within planning law.
- 8.16.4 An assessment on the potential impacts on those identified above is contained within the subsequent sections.

8.17 Baseline Projection

If the proposed development was not undertaken then it is likely that it would remain as it is during the short term. Changes to vegetation due to the colonisation by scrub and then woodland would occur over time without management intervention.

8.18 Impact Assessment and Evaluation

Due to the phased nature of the development and its scale, the construction and operational phases of development would run in parallel. In that context there would be an overlap of impacts and for certain issues they are considered in tandem below.

8.19 Construction Phase

Phasing

The nature of the construction phase is described in section 2.5 and the assessment of impacts below has been based on that information. For the purpose of this assessment the construction phase will commence in Year 1 of development with the construction of access to the site and the provision of services. After this period the proposed new access roads would be opened and construction of buildings would commence. It is anticipated that the development would take 12-15 years to complete though this would depend on the housing market, and thus there would be an overlap of construction and operational phases.

8.20 Mitigation Measures - General

8.20.1 The construction phase would bring about changes to the landscape and visual amenity. Whilst some of these are inevitable, and of a temporary nature, it would be beneficial to provide mitigation.

8.20.2 The phasing of onsite operations would ensure that proposed screening and assimilation features, fencing and tree planting to the northern boundary to give visual screening to the motorway would be undertaken at the earliest practicable opportunity and within year 1 of commencement of the construction phase. The physical construction of the proposed 1200 houses and associated development over 12-15 years would also allow the establishment of planting prior to the entire site being operational. It is anticipated that detailed mitigation proposals would be subject to planning conditions imposed on Reserved Matters planning applications for individual development parcels, but in general terms the following principles would apply.

- a) The sensitive location of storage areas and the utilisation of existing screening afforded by vegetation would be utilised to mitigate any potential short term adverse effects of the storage of materials, plant and machinery.

- b) To ensure protection of those features appropriate protection and management of existing vegetation during the construction phase would be undertaken in line with recognised best practice.

8.21 Residual Impacts for the Construction/Operational Phases

Character of the Site and Adjacent Land

- 8.21.1 The character of the Site itself is considered to be urban fringe. The predominant use and character to the south, east and west of the site is residential. The land to the north beyond the M62 is rural in character. There would be **neutral** impact on the character of the residential areas. The impact of the development on land to the north, which is already visually influenced by the M62 motorway would be mitigated by screen fencing and planting undertaken during the early stages of development and would be **negligible adverse**.

Landscape features (Construction Phase)

- 8.21.2 There would be a loss of 'best and most versatile' agricultural land which comprised 17.4 hectares of class Grade 2 and 19.9 hectares of class Grade 3A which would be irreversible. There is no trigger level within the NPPF to determine at which point the loss of such land would be unacceptable in planning terms. Natural England were consulted by Warrington Borough Council at the scoping stage of the ES preparation. Their comments in respect of agricultural land quality was for the ES to address soil issues with reference to paragraphs 109 and 112 of the NPPF and for soil conservation strategies based on the DEFRA *Code of Practice for The Sustainable Use of Soils on Development Sites* to be adopted. Government Guidance contained within paragraph 112 of the NPPF recommends that Local Planning Authorities should seek to maximise the use of brownfield land and that land of lower quality should be used in preference to Best and Most Versatile soils for development. Paragraph 109 refers to nature conservation issues and pollution. Large areas of agricultural land surrounding Warrington fall into the 'Best and Most Versatile' category however, and there is insufficient brownfield land available to satisfy housing demand needs. On that basis, it is considered that the loss would be '**minor to moderate**' adverse. The land is no longer farmed however, and in mitigation and in accordance with current Government Guidance, a soil conservation strategy would be put in place to maximise the re-use of top soil resources and protect it from consolidation and/or contamination during the construction phase of development. In terms of other landscape features such as watercourses and vegetation, they would be retained and enhanced. The residual impact for those features would be therefore **neutral**.

Visual Impact (Construction/Operational Phases)

- 8.21.3 A theoretical Zone of Visual Impact (ZVI) forms **Volume 3 Appendix LND 3** of this assessment. The ZVI is indicative of the part of the landscape from which views of the proposed operational

development might be gained. It does not imply that views would be possible from all points within the area delineated. Nor does it indicate that all the development might be seen.

8.21.4 **Table 8.1** below summarises the significance of residual effects based on an analysis of the 24 photograph viewpoints contained within **Volume 3 Appendix LND4** of the Environmental Statement.

Table 8.1 Viewpoint Analysis Table Summaries

Vp Number	Representation of View	Susceptibility of Visual Receptor	Value Attached to View	Sensitivity of Visual Receptor	Magnitude of Change	Significance of Visual Effect during Construction	Significance of Residual Effects (Operational and after landscaping established)
1	Rear view of properties of Elm Road and track users.	Medium	Moderate	Medium	Large Adverse	Major Adverse	Moderate Adverse
2	Private view within Site, on track leading to utilities building.	Low	Low	Low	Very large/ Substantial Adverse	Moderate Adverse	Moderate Adverse
3	View from rear gardens from properties on Newhaven Road.	High	Low	Medium	Very large/ Substantial Adverse	Major-Moderate Adverse	Moderate Adverse
4		High	Low	Medium	Very large/ Substantial Adverse	Major-Moderate Adverse	Moderate Adverse
5		High	Low	Medium	Very large/ Substantial Adverse	Major-Moderate Adverse	Moderate-Major Adverse
6	PROW M62 Footbridge	High	Moderate	Medium (due to context)	Large Adverse	Moderate to Major Adverse	Moderate Adverse
7		High	Moderate	Medium (due to context)	Large Adverse	Moderate to Major Adverse	Moderate Adverse
8	Radley Lane users (motorists and pedestrian)	High	Moderate	High	Large Adverse	Major Adverse	Major Adverse. Over time Moderate Adverse
9	Private View within Site, on boundary of Radley Plantation	Low	Moderate	High	Very large/ Substantial Adverse	Moderate Adverse	Moderate Adverse
10	On Site, private view.						
11	Recreational Ground users.	High	Moderate	High	Very large/ Substantial Adverse	Major Adverse	Major Adverse
12	General public and residential properties, Ballater Drive.	Medium	Low	Medium	Medium adverse	Moderate	Moderate Adverse
13	General public and residential properties, Lockerbie Close.	Medium	Low	Medium	Small adverse	Minor adverse	Minor adverse
14	Private view. Representative of view from Fairhaven/ the Alders NHS facility.	Low	Low	High	Very large/ Substantial Adverse	Moderate adverse	Moderate Adverse
15	View of motor users and pedestrians	Medium	Moderate	Medium	Negligible	Negligible	Negligible
	View gained from adjacent properties	Medium	Moderate	Medium	Small adverse	Minor adverse	Negligible
16	PROW FP6. View of walkers.	High	Moderate	Medium	Small adverse	Minor adverse	Minor adverse
17	Delph Lane. General public and residential properties	Medium	Moderate	Medium	Small adverse	Minor adverse	Minor adverse
18	PROW FP1. View of walkers.	High	Moderate	Medium	Medium adverse	Moderate	Moderate Adverse, reducing to Minor Adverse during summer months and longer term.
19	Mill Lane bridge over M62. Road users and pedestrians.	Medium	Low	Medium	Small adverse	Minor adverse	Moderate to Minor Adverse, reducing to Minor Adverse during summer months and longer term.
20	Mill Lane. Road users and pedestrians.	Low	Low	Moderate	Moderate adverse	Moderate adverse	Moderate Adverse
21	PROW FP2. View of road users and pedestrians. Peel Cottage Lane.	High	Moderate	Medium	Very large/ Substantial Adverse	Major Adverse	Major Adverse
22		High	Moderate	Medium	Very large/ Substantial Adverse	Major Adverse	Major Adverse
23	PROW FP 23. View of pedestrians.	High	Moderate	Medium	Small adverse	Minor adverse	Minor adverse
24	On Site, private view.						

Key: Dark Grey- PROWs/ Track/ Pedestrian Views. Orange- Private views from properties. Blue- Vehicle users and pedestrians on pavements. Green- Recreational views. White- Private View within Site.

Summarised Impact					
Landscape		Character		Visual	
Construction Phase	Operational Phase (Post Mitigation)	Construction Phase	Operational Phase (Post Mitigation)	Construction Phase	Operational Phase (Post Mitigation)
Minor-Moderate Adverse	Minor Adverse	Minor Adverse	Negligible	Moderate	Minor Adverse

8.22 Visual Receptors

Highways

- 8.22.1 Users of the M62 motorway would be aware of construction works to the central area of the northern part of the site, where it is at grade and where clear views are possible for the period of construction of the screen fencing. Such works would be short term (9-12 months depending on weather conditions and build out rates). However motorists and their passengers would be travelling at speed and would have oblique views. In any event views from roads are not considered to be 'sensitive'. There are no other significant views from highways into the body of the site though construction works to form vehicular access points into the site would be obvious. The residual impact on highway users is considered to be **minor** prior to mitigation and **negligible** after the construction of the screen mounds.

Users of the Public Footpath to the North of the Site

- 8.22.2 There is no authorised pedestrian access to the main body of the site other than the public right of way which crosses the motorway and follows Peel Cottage Lane in the north east corner. Views of the site from the pedestrian over-bridge to the M62 motorway are panoramic of the whole the site (**Volume 3 Appendix APP5 Photographs 1 and 2**). These views would be very difficult to screen. This would be a short experience of a longer route, however. In the section leading the southern base of the motorway footbridge the track is well screened from the main body of the site and views are limited. The adjacent vegetation would be retained. Beyond the motorway to the north possible views of the site diminish with distance. (**Volume 3 Appendix LND4 Photographs 15, 16, 17, 18 and 23**). Views of the site from that direction are restricted to the central area of the site. To the east and west the site is screened by motorway embankment and mature trees within the curtilage of the motorway itself. After the screen fencing have been constructed views from the north would be obscured. It is considered that the residual visual impact on public footpaths would be **minor**

Users of the Amenity Space/Playing Fields to the East and South of the Site

- 8.22.3 Users of open space and playing fields are considered to be sensitive visual receptors. The existing playing fields to the east of the site (Mill Lane) will be developed as part of the scheme proposals. Replacement facilities will be provided by the upgrading of the Windermere Avenue site (**Volume 3 Appendix APP16**). Views from the playing field to the south-east are screened from the development by boundary vegetation and

by the Radley Plantation. The residual impact on users of amenity open space is considered to be **neutral**.

Views from Private Properties

- 8.22.4 Views from private properties may be gained from the following locations: They are mostly from the rear elevations and or gardens. The total number of dwellings and location is set out below.

West

Elm Road 14
Birch Avenue 2
Poplars Avenue 18

Central

Newhaven Road 82
Windermere Avenue 44
(24 would overlook proposed open space)

East

Lockerbie Close 4 (gable on)
Radley Lane 4 + Peel Hall
Ballater Drive 15 + 1 gable on

- 8.22.5 A pre-mitigation impact on these properties can be established by reference to the site photographs included within **Volume 3 Appendix LND 4** and in particular photographs 2, 3, 4, 7, 9, 10, 11, 12, 13, 14 and 21. The photographs are taken toward properties due to access issues but show the degree of openness or conversely current screening afforded by vegetation or other features. A detailed assessment of residual impact is contained within Table 8.1 in section 8.21.4 above. This varies depending on the precise location of properties in relation to adjacent development. It is considered that the impact on private dwellings would be **moderate -major adverse** for a small number of dwellings located on Newhaven Road (VP5), **moderate adverse** for a number of other dwellings on Newhaven Road, **moderate adverse** for dwellings on Ballater Drive (VP 12), **minor adverse** for dwellings located on Lockerbie Close (VP13), and **minor adverse** for properties on Delph Lane (VP 17). There will inevitably be a loss of a view over open land for the occupiers of these properties. Residential amenity assessments are sometimes used rather than LVIA to establish such impacts. In respect of dwellings adjacent to the site the outlook will be of a similar land use. In terms of the visual impact on private properties this factor has tempered the overall assessment resulting on impact to be considered as **Minor Adverse** significance overall.

- 8.22.6 Any necessary mitigation in the form of a landscape scheme and implementation/phasing of works would be agreed at the reserved matters stage of detailed planning applications and would include the establishment of appropriate stand-off zones, the detailed design including heights and the orientation of new dwellings and boundary screen planting.

Night time visual effects

- 8.22.7 Lighting from the M62 motorway to the north could impact on the new residents of the site in as much as it already has such an impact on existing dwellings, though with modern methods of illumination which are designed to reduce the lateral spread of light, such impact would be minimised. TD3407 (The relevant section of the *Highway Agency Design Manual for Roads and Bridges*) deals with the design of road lighting for the strategic motorway and all-purpose trunk network. Paragraph 2.2 of that document states that: *'All road lighting shall be designed and installed such that the installation will emit no light above the horizontal.'* Furthermore there would be a stand-off zones varying between 29 and 52 metres from the boundary of the motorway within which any light overspill would dissipate and that proposed tree planting within that zone would further reduce any light pollution. Housing adjacent to the north could also be single aspect with no habitable room windows facing the motorway, which would also have benefits in terms of noise attenuation. Views from houses are, in any event, generally obscured as occupiers close their curtains at night. Any impact from the development itself to the wider environment would be seen within the context of other existing street lighting within the urban area of Warrington along with the illuminated M62 to the north.

8.23 Residual Impacts

As mitigation methods have been incorporated within the proposed scheme, the assessments of impact significance as set out in sections 8.21 and 8.22 of the Environmental Assessment remain valid.

8.24 Post Development Monitoring

- 8.24.1 The implementation of the landscape schemes would be subject to planning conditions imposed by the LPA at the reserved matters stage.
- 8.24.2 It is envisaged that the implementation of open space and landscaping will be undertaken in conjunction with a management plan. This plan would cover the establishment period of new planting and the maintenance of any existing planting and future maintenance of all planting and would include programmed checks.

8.25 Cumulative impacts

There are no other proposed developments adjacent to the site or within its zone of visual impact that would lead to a cumulative impact arising. Land to the north beyond the motorway is green belt land with major constraints on development. Land to the east, west and south is existing residential development. The proposed development and its screening would obscure the existing views and reduce the impact from adjacent viewpoints such as the public footpath.

8.26 Conclusion

Subject to the mitigation proposed, there would be no overall **significant adverse impact in landscape, character and/or visual terms.** This is based on combining the separate assessments for Landscape impacts (**moderate/minor adverse**), Character impacts (**neutral/no impact**), and visual impacts (**minor adverse**), based on the professional judgement of the authors.

8.27 Summary

- 8.27.1 The assessment was undertaken in accordance with established and accepted methodologies including those within the 'Guidance for Landscape and Visual Assessment', third edition, published jointly by The Landscape Institute and The Institute of Environmental Management and Assessment (2013).
- 8.27.2 A review of all relevant mapping aerial photography, policy and other documents has been undertaken together with field studies to establish the baseline situation in terms of landscape and visual amenity.
- 8.27.3 The site is not located within or adjacent to areas of designated special landscape value. It is urban fringe in nature and is mainly flat with localised undulations. A mix of dense scrub and grazed grass covers the site. Typically for the location, there are few established trees present. There are no individual features of landscape amenity value.
- 8.27.4 Due to topography and context, the site's visual prominence is limited. Aspects of the site are visible in places mainly from the public right of way that crosses the site and from adjacent residential dwellings. However, in conclusion it is assessed that the development as proposed and subject to the long term mitigation as set out in this document and on the Parameters Plan prepared by Appletons **Appendix APP 6** would result in there not being any overall, significant, adverse impact in landscape, character and visual amenity terms. There is no cumulative impact on the Green Belt land to the north since there are no other development proposals of this nature in the vicinity but in any event Green Belt is not a landscape designation in planning terms.

8.27.5 Request for additional information/clarification from PINS

- Information in respect of the impact on agricultural land is set out in paragraph 8.21.2.
- Clarification in respect of pre-mitigation impact on residential property is set out in table 8.1.
- Summary information in respect of impact on residential property is set out in paragraph 8.22.5.
- Summary conclusions in respect of the final assessment are set out in paragraph 8.26.1.
- Impacts in respect of lighting are set out in paragraph 8.22.7.

9.0 TRANSPORTATION AND HIGHWAYS

This section replaces in entirety the corresponding section of the submitted ES and addendum 1.

9.1 Introduction

- 9.1.1 This chapter focuses on the effects that the proposed development will have on access and transport during the construction phase as well as when the development is fully operational. It draws on the detailed analysis and mitigation measures set out in the full Transport Assessment (ref: 1107/TA/01/A dated January 2018) and the Addendum Transport Assessment (ref: 1901/TA/01/A/Addendum dated March 2020) prepared by Highgate Transportation.
- 9.1.2 Discussions outlining the approach and methodology have been held with Warrington Borough Council (the Council) in its role as the local highway authority and with Highways England as the strategic highway authority. This set out how the development would be accessed, how its impact would be assessed and the type of sustainable transport, travel plan and physical measures that could support the development.
- 9.1.3 The Transport Assessment considers all modes of travel and the demands that the proposed development will place on transport infrastructure. The study area covers the local transport network including pedestrian and cycle links to the surrounding areas as well as public transport services and facilities. Plans showing the overall study area, the existing highway network within the study area, the existing bus network and the existing PRow network are contained in **Appendices T1, T2, T3 and T4** respectively.
- 9.1.4 In transport terms the guiding principles in the development of the scheme have been to encourage the use of sustainable modes of transport and to contain trips within the development as far as possible. **Appendix T5** contains an illustrative plan showing the proposed road network within the development. In terms of vehicular access each site access will generally provide access to a specific area of the overall development and the plan in **Appendix T5** also shows the amount of development from each access.
- 9.1.5 It is proposed that the main vehicular accesses to the development will be provided from the Mill Lane arm of the Blackbrook Avenue/Ballater Drive/Mill Lane/Enfield Park Road roundabout junction to the west of the site, and from Poplars Avenue to the south. Additional access will provided from Mill Lane, Birch Avenue and a second access on Poplars Avenue. Access to the improved sports pitches will be from Grasmere Avenue. Plans showing these accesses are contained in **Appendix T6**.

- 9.1.6 A Memorandum of Understanding has been agreed between the developer and Warrington's Own Buses regarding how best to serve the Peel Hall site by bus. Indicative timetables have been drawn up (**Appendix T7**) showing the diversion of the existing 25 and 20 routes into the proposed development. During the construction phase it is proposed that first existing service 25 would be extended into the easterly part of the site from Blackbrook Avenue, followed by service 20 from Poplars Avenue to the south. These services will offer Peel Hall residents regular bus connections for Warrington Town centre, Warrington Central Railway Station and Bus Interchange/Shopping Centre, Birchwood Rail Station and Business Park/Shopping, Warrington Vale Royal and Priestley College as well as the Orford Jubilee Hub and Winwick Road retail parks. The developer will provide gap funding for the first five years to establish the services. Given these are existing services it is expected that these route extensions will be profitable.
- 9.1.7 **Appendix T8** contains the illustrative pedestrian and cycle linkages to the surrounding area. The plan outlining the proposed construction and highway phasing of development is contained in **Appendix T9**.
- 9.1.8 The assessment work is based on the Council's WMMTM16, cordoned for the Peel Hall study area; the data from which has been analysed and then used to model individual junctions to further test the impact of the development as well as provide a VISSIM corridor model for the A49. The WMMTM16 output files are contained in the Addendum Transport Assessment (March 2020) and the resultant mitigation measures proposed are provided at **Appendix T10**.

9.2 Transport Policy and Guidance

- 9.2.1 Throughout the development of the scheme, account has been taken of both national and local transport related policy and guidance.
- 9.2.2 The main national transport policy and guidance is set out in:
- i. National Planning Policy Framework (2019)
 - ii. LA 101 Introduction to Environmental Assessment (July 2019)
 - iii. LA 102 Screening Projects for Environmental impact Assessment (July 2019)
 - iv. LA 103 Scoping Projects for Environmental Assessment (January 2020)
 - v. DfT Circular 02/2013 - Strategic Road Network and the Delivery of Sustainable Development (2013)
 - vi. The Strategic Road Network - Planning for the Future (2015) published by Highways England
 - vii. Manual for Streets (2007) and Manual for Streets 2 (2010) published by DfT

- viii. Transport Advice Note TA 79/99 (May 1999)
- ix. DMRB Volume 11 Section 3 Part 8: Pedestrians, Cyclists, Equestrians and Community Effects (1993)
- x. DMRB Volume 11 Section 3 Part 9: Vehicle Travellers (1993)
- xi. Institute of Environmental Assessment – Guidelines for the Environmental Assessment of Road Traffic (1993)

9.2.3 Local transport policy and guidance is set out in:

- i. Local Plan Core Strategy (policies CS1, CS4, MP1, MP3, MP4, MP7, MP10, QE3, QE6 and QE7) adopted in July 2014
- ii. Emerging Local Plan 2017-2037 (March 2019)
- iii. Warrington Local Transport Plan 4
- iv. Warrington's Design Guide - Residential and Industrial Estate Roads (2008) [withdrawn]
- v. Warrington's Standards for Parking in New Development (2015)
- vi. Warrington's DGN1 Parking and Servicing (2015)
- vii. Warrington's DGN2 Travel Plans (2016)
- viii. WBC's SPD on Design and Construction (October 2010, updated 2016)

9.2.4 The thrust of these policies and guidance is to encourage development that will be safe and accessible to all, and that will be sustainably located or can be made to be sustainably located by the introduction of mitigation measures.

9.3 Prediction Methodology

Potential Impacts

9.3.1 The anticipated impacts on access and transport relate to:

- i. Nuisance, disruption and severance arising from the construction of the development
- ii. The use of and implications for public transport
- iii. The effect on walking and cycling opportunities
- iv. The vehicular traffic impact resulting from the occupation of the development

Sources of Information

9.3.2 Data from the following sources have been used in the assessment:

- i. Traffic flows derived from manual and automatic surveys carried out by independent specialist surveyors
- ii. Agree development trip rates derived from the TRICS database

- iii. NTEM adjusted traffic growth derived from the TEMPRO database
- iv. Trip distribution and assignment based on origin-destination data within WMMTM16
- v. Highway ownership records and public right of way information supplied by the Council
- vi. Site-wide topographical surveys carried out by independent specialist surveyors

Methodology

- 9.3.3 The methodology used in this assessment is to assess the magnitude of change and significance of impact for drivers, bus passengers, pedestrians and cyclists both during the construction phase and the operational phase.

Magnitude of Change and Significance of Impacts

- 9.3.4 In terms of significance of impacts the following terminology has been adopted:
- i. Negligible - equals no impact on the local highway network
 - ii. Minor - some increase in traffic flows but not leading to congestion or delays
 - iii. Moderate - Increase in traffic flows capable of mitigation by traffic engineering or sustainable transport measures
 - iv. Major - significant impact on the local highway network leading to delays and reduced traffic flows, not possible to mitigate

9.4 Baseline Environment

Baseline Conditions – Existing Network

- 9.4.1 The Peel Hall site is located on the northern edge of Warrington, adjacent to the existing residential areas of Hulme, Blackbrook, Cinnamon Brow and Houghton Green. It is bounded by the M62 to the north, Mill Lane to the east, Poplars Avenue to the south and Birch Avenue to the west.
- 9.4.2 Baseline conditions have been identified by reviewing the existing highway, bus, rail, pedestrian and cyclist networks. Existing traffic flows have been obtained from survey work.
- 9.4.3 The modelling has been carried out using the Council's WMMTM16 area-wide SATURN model, created by their consultants AECOM. The modelling uses survey data from 2016, such as road-side interview data, mobile phone data and ATC traffic surveys, to create a 2016 base model. The WMMTM16 was cordoned to represent the Peel Hall study area and updated where required using 2019 survey data.

Existing Highway Network

9.4.4 The WMMTM16 was used to provide 2018 traffic flows. These are illustrated on flow diagrams contained in **Appendix T11**.

9.4.5 At times during the peak period's congestion can occur along the main corridors in the area including the M62, Winwick Road, Sandy Lane West, Long Lane, Blackbrook Avenue and Birchwood Way, as well as elsewhere.

Existing Bus Network

9.4.6 There are around 10 existing bus services that currently operate close to the proposed site accesses and are as follows:

- i. Mill Lane and Blackbrook Avenue Roundabout
Service 25
- ii. Poplars Avenue Central Access
Services 20 and 20A; 21, 21A and 21E
- iii. Poplars Avenue West
Services 20 and 20A; 21, 21A and 21E; 19 and 22 on the A49; 329 and 360
- iv. Birch Avenue
Services 19 and 22; 20 and 20A; 21, 21A and 21E; 329 and 360
- v. Grasmere Avenue
Services 20 and 20A; 21, 21A and 21E; and 25

9.4.7 All services connect this part of Warrington with the town centre. Services 25, 26 and 26E provide access to Birchwood Station and Birchwood Park in the east. Information regarding the existing bus network is contained in **Appendix T3**.

9.4.8 It is considered that the level of bus provision to the site is very good. At peak times these routes are busy, especially closer to the centre of Warrington. Existing journey times by bus from the site to key locations are set out in **Table 9.4.1**.

Table 9.4.1: Existing bus journey times from closest bus stop to key locations

From Existing Bus Stop Closest to Proposed Site Access	Key Locations – Journey Time					
	Town Centre	Birchwood Station	Birchwood Park	Warrington Business Park & Collegiate	Warrington Campus University of Chester	Orford Jubilee Hub
Poplars Ave west	15-18min	-	-	6min	-	8min
Poplars Ave central	14-20min	23min	15min	10min	8min	12min
Mill Lane/Blackbrook Ave	17-22min	17-20min	9-10min	9-10min	3min	7min*

* Monday-Saturday Evenings, Saturdays

Existing Rail Network

9.4.9 Existing rail stations that serve Warrington are:

- i. Padgate - on the Manchester to Liverpool Line. This is approximately 3.0 kilometres from the site
- ii. Warrington Central - on the Manchester to Liverpool line. This is approximately 3.5 kilometres from the site
- iii. Warrington Bank Quay - on the West Coast Mainline. This is approximately 4.5 kilometres from the site
- iv. Birchwood - on the Manchester to Liverpool Line. This is approximately 5.2 kilometres from the site

9.4.10 A summary of the railway services (approximate times) is as follows:

- i. Manchester - 6 per hour, 28 minute journey time express (40 minute journey time stopping service)
- ii. Liverpool - 4 per hour, 34 minute journey time
- iii. Preston - 2 per hour, 27 minute journey time
- iv. Birmingham - 1 per hour, 1.25 hour journey time
- v. London - 2 per hour, 1.75 hour journey time express (3 hour stopping service)

9.4.11 The railway stations are generally located within a 10 to 20 minute cycle ride of the site. This is therefore considered to be a realistic modal choice and provides future residents with alternative options for non-car travel.

9.4.12 It is therefore concluded that existing public transport facilities are very good and that rail travel is a realistic travel choice for commuter journeys for future residents of the Peel Hall site.

9.4.13 Overall the Peel Hall site is considered to be located in a highly sustainable and accessible location with excellent public transport facilities close by.

Existing Pedestrian Network

9.4.14 Existing pedestrian access into the site is from Mill Lane, Radley Lane and Peel Cottage Lane in the east; Birch Avenue in the west; Grasmere Avenue and Windermere Avenue in the south. There is a footbridge across the M62 to the north of the site, which forms part of PRoW number 2 and links with A49 and Winwick to the north of the site via Public Rights of Way (PRoW) 1, 1a, 3 and 5. The Peel Hall site currently attracts dog walkers and recreational walkers using the PRoW, Mill Lane playing fields, Radley Common/former playing fields off Grasmere Avenue. A plan showing the local PRoW is contained within **Appendix T4**. Pedestrian connectivity to the Peel Hall site is very good and walking is a realistic alternative mode of travel to the private car.

Existing Cycle Network

- 9.4.15 Local cycling facilities comprise off-road segregated cycleways and footways along the A49 Winwick Road from the junction with Long Lane to the town centre. On-road cycleways and advanced stop lines are also provided, for example at Winwick Road junction with A50 Long Lane and the A49 junction at the Warrington Wolves Halliwell Jones Stadium. The site is located in an area that will support and encourage cycle travel.

Baseline – WMMTM16 Data

- 9.4.16 WMMTM16 has been cordoned and used as the base modelling for this transport assessment work in agreement with the Council.

Baseline Projection – Proposed Accesses and Internal Transport Network

- 9.4.17 **Appendix T5** contains an illustrative plan showing the proposed road network within the development and the amount of development off each access. It is proposed that the main vehicular accesses to the development will be provided from the Mill Lane arm of the Blackbrook Avenue/Ballater Drive/Mill Lane/Enfield Park Road roundabout junction and this will connect with a second main access from Poplars Avenue via a new 7.3 metre wide local distributor road. To prevent this road becoming a bypass for through traffic a bus gate will be introduced. Additional access to specific areas of development will be provided from Birch Avenue to the west, Mill Lane to the north-east and an additional location on Poplars Avenue to serve the employment area. Access to the sports pitches and ancillary facilities will be from Grasmere Avenue.
- 9.4.18 The plan showing the proposed access from the Mill Lane arm of the Blackbrook Avenue/Ballater Drive/Mill Lane/Enfield Park Road roundabout junction is contained in **Appendix T6**. This access road comprises a 7.3 metre wide carriageway from a proposed 36 metre diameter three-arm roundabout junction with associated facilities for pedestrians and cyclists and is expected to serve up to 700 dwellings.
- 9.4.19 The plan showing the proposed access from Mill Lane is also contained in **Appendix T6**. This access has been created by extending Mill Lane north-westwards into the site, with pedestrian and cycle facilities, and is expected to serve up to 150 dwellings.
- 9.4.20 The plan showing the proposed access from the central part of Poplars Avenue, which is located between its junctions with Newhaven Road and Windermere Avenue, is also contained in **Appendix T6**. This access road comprises a 7.3 metre wide carriageway from new a priority junction with ghost right turn lane. It includes associated pedestrian, cycle and relocated and improved bus stop facilities. It is expected to serve up to 180 dwellings, care home and local centre.

- 9.4.21 The plan showing the proposed access from the western part of Poplars Avenue, which is located between its junctions with Cotswold Road and Newhaven Road, is also contained in **Appendix T6**. This access comprises a simple priority junction with a 7.3 metre carriageway and associated pedestrian and cycle facilities and is expected to serve up to 150 dwellings. This was previously the access serving the employment land use (now deleted from the application).
- 9.4.22 The plan showing the proposed accesses from Birch Avenue is also contained in **Appendix T6**. These accesses comprise a simple priority junction located to the west of the Health Centre with 4.8 metre wide carriageway and footways on both sides, and the other is a continuation of Birch Road to the immediate south of the NHS youth facility, which will become a 5.5 metre wide shared surface road. In total these accesses will serve up to 20 dwellings.
- 9.4.23 The plan showing the proposed access to the improved sports pitches from Grasmere Avenue is also contained in **Appendix T6**. The proposal is to modify the existing access that serves local recreational facilities.
- 9.4.24 Because of the introduction of the bus gate on the local distributor road it is important that the local centre car park can be accessed without residents having to leave the development. Therefore, this car park has been designed to be split in two, with two points of vehicular access, but designed so that a through route that could allow traffic to bypass the bus gate has not been created. The local centre car park is also expected to be used as a drop off facility for the primary school.
- 9.4.25 To serve the Peel Hall development by bus, extensions to existing service 25 during the early construction phases followed by extensions to service 20 are proposed, in agreement with Warrington's Own Buses.
- 9.4.26 The proposed pedestrian and cycle linkages within the development will generally be in line with the Council's guidance, with shared cycleway-footway facilities separated from the carriageway by a verge. A high level of connectivity for pedestrians and cyclists will be provided through the site and connections will be made to the existing pedestrian routes around the site and enhanced by the additional accesses at Poplars Avenue and Mill Lane/Blackbrook Avenue. This is shown on the illustrative plan contained within **Appendix T8**.
- 9.4.27 Car and cycle parking will generally be provided to reflect the Council's guidelines and addressed at the Reserved Matters stage(s).

Baseline Projection – Trip Distribution and Assignment

- 9.4.28 All trip distribution and assignment has been carried out using WMMTM16, in agreement with the Council.

9.4.29 The development trips have been assigned in WMMTM16. Flow diagrams are contained in **Appendix T12**, based on the trips set out in **paragraphs 9.4.30 to 9.4.33**.

Baseline Projection – Development Trips Arising

9.4.30 The number of development trips associated with each use has been calculated using the TRICS database. A proportion of the trips will be contained within the development and will not impact on the wider transport network. This has been agreed with the Council.

9.4.31 The number of external development trips using each of the proposed site accesses during the AM and PM peak hour is set out in **Table 9.4.2** for a full development scenario.

Table 9.4.2: External development trips at each site access (full development)

Access	Quantum of Development	AM Arrival	AM Departure	PM Arrival	PM Departure
Poplars Avenue (Central)	180 dwellings	41	94	89	55
	care home	7	7	8	8
	food store*	28	18	54	57
	local shops	0	0	0	0
	family pub	0	0	23	15
	<i>Sub Total**</i>	<i>48</i>	<i>101</i>	<i>120</i>	<i>78</i>
Poplars Avenue (West)	150 dwellings	34	79	74	46
Mill Lane	150 dwellings	34	79	74	46
Mill Lane/Blackbrook Avenue	700 dwellings	158	366	347	215
	primary school	57	40	10	14
Birch Avenue	20 dwellings	5	11	10	6
Grasmere Avenue	community uses	10	5	7	8
Total**		346	681	642	413

* pass-by trips only

** excluding pass-by

9.4.32 In the opening year (2022), it is considered that there will be 120 dwellings occupied. These 120 dwellings will be built out (60) from the Mill Lane extension north of the junction with Radley Lane and (60) from the proposed priority junction with Poplars Avenue (central). The corresponding trips are set out in **Table 9.4.3**.

Table 9.4.3: External development trips at each site access (part dev.2022)

Access	Quantum of Development	AM Arrival	AM Departure	PM Arrival	PM Departure
Mill Lane	60 dwellings	14	31	30	18
Poplars Avenue (central)	60 dwellings	14	31	30	18
Total		28	62	60	36

9.4.33 Five years after opening (2027), will be assessed in terms of the traffic impact on the local highway network before the internal link to the local centre is created (see **Figure 9.4.1**). It is agreed that this will present a worst-case intermediate build out scenario, with no discounting of vehicular trips for any of the land uses, because residents on the development would have to use the local highway network to access shops without the direct vehicular link to the local centre through the site. The corresponding trips are set out in **Table 9.4.4**.

Figure 9.4.1: Peel Hall network 2027 before road link to local centre

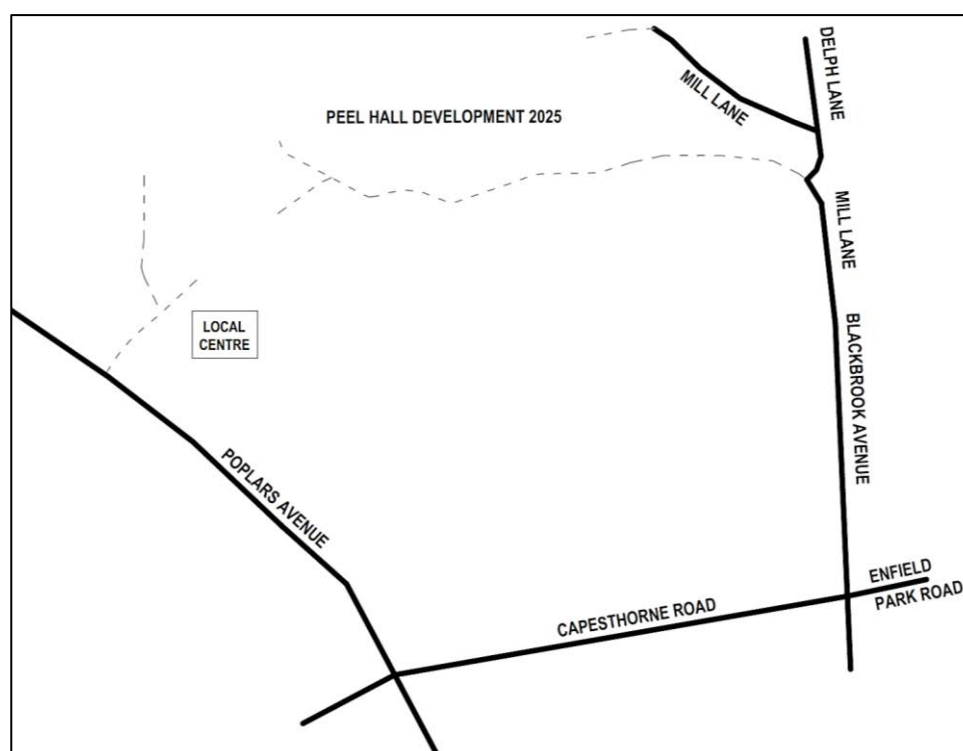


Table 9.4.4: External development trips at each site access (part dev.2027)

Access	Quantum of Development	AM Arrival	AM Departure	PM Arrival	PM Departure
Poplars Avenue (Central)	75 dwellings	17	39	37	23
	care home	7	7	8	8
	food store	92	61	181	191
	local shops	30	29	36	39
	family pub	0	0	23	15
	<i>Sub Total</i>	<i>146</i>	<i>136</i>	<i>285</i>	<i>276</i>
Poplars Avenue (West)	75 dwellings	17	39	37	23
Mill Lane	150 dwellings	34	79	74	46
Mill Lane/Blackbrook Avenue	280 dwellings	63	147	139	86
Birch Avenue	20 dwellings	5	11	10	6
Grasmere Avenue	community uses	10	5	7	8
Total		275	417	552	445

Baseline Projection – Background Traffic Growth and Committed Development

9.4.34 Background growth was forecast to NTEM levels within the cordoned Peel Hall WMMTM16, with known committed developments explicitly modelled as follows:

- i. J9 Retail Park (2016/29425)
- ii. Parkside Phase 1 (2018/32247)
- iii. Birchwood Park (2015/26044)

Baseline Projection – Forecast Traffic Flows

9.4.35 The Peel Hall WMMTM16 has been used for the following forecast scenarios to test for development impact:

- i. Opening Year 2022
 - Do Minimum (no development)
 - Do Something (120 dwellings)
 - Do Something (full development)

- ii. Five Years After Opening 2027
 - Do Minimum (no development)
 - Do Something (600 dwellings and Local Centre)
- iii. 10 years After Opening 2032
 - Do Minimum (no development)
 - Do Something (full development)

9.4.36 The corresponding flow diagrams are contained in **Appendix T13**.

9.5 Impact Assessment – Construction Phase

Predicted Impacts – Phasing of Development

- 9.5.1 The Peel Hall site will generate construction traffic throughout its development period, and this will have an impact on the local highway network, especially in the immediate vicinity of each site access. In reality each access and associated area of development will have its own timetable and impact, although there will be overlapping.
- 9.5.2 It is anticipated that the development will come forward in 10 phases over a 10 year period with typically around 120 residential units being constructed each year; with the relocated sports pitches in year one, the local centre and care home opening at the end of year two, and the primary school by the end of year eight. **Table 9.5.1** below sets out indicatively how the development may be phased in highway terms and the accompanying plan is contained in **Appendix T9**.

Table 9.5.1 – Indicative Highways Build Out Table

Year End	Number of Residential Units off Each Access									Indicative Phasing (number of properties sold at year end)
	Distributor Road Blackbrook Ave		Poplars Ave		Mill Lane		Birch Ave		Cumulative Total	
	New	Cum.	New	Cum.	New	Cum.	New	Cum.		
1	0	0	60	60	60	60	0	0	120	1a 60 1b 60 Relocated sports pitches
2	50	50	50	110	20	80	0	0	240	2a 20 2b 50 2c 50 Need first part of distributor road from east and turning area for bus service Local Centre and Care Home off Poplars Ave
3	50	100	45	155	25	105	20	20	380	3a 25 3b 30 3c 20 3d 30 3e 7 3f 13 3g 15

Table 9.5.1 Continued

Year End	Number of Residential Units off Each Access									Indicative Highways Build Out (number of properties sold at year end)
	Distributor Road Blackbrook Ave		Poplars Ave		Mill Lane		Birch Ave		Cumulative Total	
	New	Cum.	New	Cum.	New	Cum.	New	Cum.		
4	55	155	40	195	25	130	0	20	500	4a 25 4b 35 4c 20 4d 20 4e 20 Temporary emergency link through to Radley Lane
5	60	215	40	235	20	150	0	20	620	5a 20 5b 30 5c 30 5d 20 5e 20 Potential for initial bus link through Local Centre and connecting to eastern distributor road Emergency link through Local Centre created Provision of emergency access through to Poplars Avenue (west) from distributor road
6	95	310	25	260	0	150	0	20	740	6a 10 6b 30 6c 55 6d 25

Table 9.5.1 Continued

Year End	Number of Residential Units off Each Access									Indicative Highways Build Out (number of properties sold at year end)
	Distributor Road Blackbrook Ave		Poplars Ave		Mill Lane		Birch Ave		Cumulative Total	
	New	Cum.	New	Cum.	New	Cum.	New	Cum.		
7	90	400	30	290	0	150	0	20	860	7a 40 7b 50 7c 30
8	100	500	20	310	0	150	0	20	980	8a 30 8b 70 8c 20 Primary School Completion of distributor road
9	110	610	10	320	0	150	0	20	1,100	9a 10 9b 100 9c 10
10	90	700	10	330	0	150	0	20	1,200	10a 90 10b 10 Provision of final emergency access through to employment distributor road

9.5.3 It is intended that most excavated material will be retained on site, however, there will be a need for building materials to be brought to the site. During the construction phase each site access junction is expected to have HGV construction traffic associated with it as set out in **Table 9.5.2**. It should be noted that the figures represent two-way movements i.e. 4 HGV movements shown in the table would result from 2 arrivals and 2 departures. It should also be noted there will be an overlap for some phases as construction will take longer than one year, whereas other phases may take less.

Table 9.5.2 – Anticipated HGV movements per day

Year End	HGV Movements/Day					Total HGVs/Day
	Residential				Non-Residential	
	Distributor Road Blackbrook Ave	Poplars Ave	Mill Lane	Birch Ave		
1	0	6	6	0	Relocated Sports Pitches = 2	14
2	6	6	2	0	Local Centre and Care Home off Poplars Ave = 10	24
3	6	4	2	0 (2 to access via employment land)	-	14
4	6	4	2	0	-	12
5	6	4	2	0	-	12
6	10	2	0	0	-	12
7	10	2	0	0	Remaining Sports Pitches and Ancillary Facilities = 2	14
8	10	2	0	0	Primary School = 4	16
9	12	2	0	0	-	14
10	10	2	0	0	-	12

9.5.4 From the above table it can be seen that:

- i. Mill Lane in the vicinity of the new access is forecast to have up to six HGVs movements on average per day during the construction phase in Year 1, with less the following four years.
- ii. Birch Avenue will have no HGV movements. The associated construction vehicles will access the two parcels of development land via the Peel Hall site while the 20 dwellings proposed are being constructed.
- iii. Poplars Avenue is forecast to have up to 16 HGV movements on average per day during the various construction phases.
- iv. Blackbrook Avenue/Mill Lane in the vicinity of the new access junction is forecast to have up to 14 HGV movements on average per day during the various construction phases.

- 9.5.5 At this stage it is anticipated that construction traffic will access the site via the M62 Junction 9, A49 Winwick Road, A50 Long Lane, Birchwood Way, then either Poplars Avenue or Blackbrook Avenue and Mill Lane.
- 9.5.6 In order to assess the HGV movements on the wider construction route the highest year in terms of construction traffic i.e. Year 2 been identified (24 HGV movements daily) has been compared with surveyed HGV flows. Poplars Avenue and Mill lane have also been reviewed for their corresponding HGV movements set out in **Table 9.5.2**. This is shown in **Table 9.5.3** below.

Table 9.5.3 – Anticipated 2019 HGV percentage increase

Road	1000-1600 (construction day)		
	Surveyed HGV	Proposed HGV	% Increase
Winwick Road*	1,042	24	2%
Long Lane	349	24	7%
Blackbrook Avenue**	255	24	9%
Birchwood Way**	830	24	3%
Poplars Avenue	45	16	36%
Mill Lane	14	6	43%

2019; *2018; **2015

Predicted Impact – Highway Network

- 9.5.7 Construction traffic will be controlled by means of a Construction Management Plan which will form one of the mitigation measures. It is assumed that as the M62 already carries a significant amount of HGV traffic, HGV traffic from the development will have a very minor impact.
- 9.5.8 It is expected that during the construction phase there will be at times disruption on the local highway network for all users including public transport and there may be temporary restrictions placed in order to construct the new accesses at Poplars Avenue and Mill Lane/Blackbrook Avenue. However, the magnitude of change is considered to be small given the level of HGV traffic set out in **Table 9.5.2** above. Therefore, the impact is expected to be of **minor to moderate adverse significance**.

Predicted Impact – Bus Passengers

- 9.5.9 From year two, service 25 from Blackbrook Avenue in the east will be extended into the site with temporary turning facilities and bus stops provided as appropriate. It is considered that the existing services 20/21 at Poplars Avenue will be adequate to serve the early phases of the new development off the Poplars Avenue (central) access. During the peak periods services 20/21 operate at a frequency of eight to 10 buses per hour, and service 25 will be provided at a frequency of two buses per hour, which will include for the provision of extra buses on the route.
- 9.5.10 Service 25 will be extended into the site on weekdays and Saturdays in line with the existing level of service. For existing bus users there will be a minor increase in journey times and an increase in

capacity to the eastern services, and for future residents a regular bus service will be available from occupation/year two.

- 9.5.11 During the construction phase bus routes may at times be affected by the disruption that occurs on the highway network as described above.
- 9.5.12 Overall it is anticipated that the magnitude of change during the construction phase will be small to medium given the potential for increased journey time. Therefore, the impact is expected to be of **minor beneficial significance**.

Predicted Impact – Pedestrians and Cyclists

- 9.5.13 The changes likely to be noticed by most pedestrians and cyclists during the construction period will be firstly when the new accesses at Poplars Avenue and Blackbrook Avenue/Mill Lane are being built, which will be confined to specific time periods, and secondly the increase in daily HGV traffic on the local highway network.
- 9.5.14 It is considered that construction of the main accesses will likely result in a small to medium magnitude of change at these locations, which is expected to be of **minor adverse significance**.
- 9.5.15 It is anticipated that there will be a reduction in the amenity value for pedestrians and cyclists associated with the increase in HGV movements and as such the magnitude of change will be small to medium depending on location. However, as set out in **Table 9.5.3** the percentage increase on most links is low and therefore the impact generally is expected to be of **minor adverse significance** on the majority of links.
- 9.5.16 On Mill Lane the percentage increase is high, resulting in a medium magnitude of change, but the time period involved is relatively short. It is therefore considered that the impact on these roads will be of **moderate adverse significance**.
- 9.5.17 On Poplars Avenue the percentage of HGV increase is high and the period of construction vehicles using this route will be for the majority of the 10 year construction period. As such the anticipated magnitude of change will be medium. However, generally the footways are set back from the carriageway by a wide grassed verge. It is therefore considered that the impact on this road will be of **moderate adverse significance**.

Mitigation Measures

- 9.5.18 In order to ensure that appropriate controls will be implemented to protect safety and the environment, it is proposed that one of the planning conditions will require a Construction Management Plan to be agreed. This will cover each phase of the development and include details of lorry routing and hours of site operation, as well as maximum size of vehicles.

9.5.19 When required, traffic management will be introduced to ensure the safety of road users.

9.5.20 It is also anticipated that there will be a planning condition to provide a programme of temporary footpath closures or diversions and opening of new routes during the construction period.

The Residual Impacts

9.5.21 The sensitivity of existing and future drivers, bus passengers, cyclists and pedestrians to any long term residual effects of the construction phase is expected to have a **negligible to minor adverse significance**.

9.5.22 The sensitivity of the existing local community to the long term effects of any severance that occurs during the construction phase is expected to have a **minor adverse significance**.

9.6 Impact Assessment – Operational Phase

Predicted Impacts

- 9.6.1 The development will give rise to an overall increase in travel demand in the area increasing traffic flows on the surrounding highway network, increasing demand for public transport, increasing the use of walking and cycling routes and increasing the potential for road traffic accidents. Without the development there will be fluctuations and increases in traffic flow generally on the highway network due to natural growth even where the network is constrained; leading to increases in journey times.
- 9.6.2 It is predicted in **Table 9.4.2** that the level of vehicular trips generated at each access when fully operational will result in the order of 1,027 vehicle movements per hour external to the site during the weekday morning peak hour and 1,055 vehicle movements during the weekday evening peak hour.
- 9.6.3 There will be an increase in the use of the bus, pedestrian and cycle networks in the area for a variety of purposes including employment, shopping, educational and recreational related trips.

Predicted Impact – Highway Network (Links)

- 9.6.4 The new development will result in additional traffic throughout the local area. The flow diagrams in **Appendix T13** set out the forecast traffic flow movements for the future years of 2022, 2027 and 2032 Do Minimum and plus development traffic, Do Something.
- 9.6.5 The link capacity of roads within the immediate area is reviewed in Technical Note TN/09, included as the Transport Assessment Addendum submission and contained as text-only at **Appendix T14** for reference. It can be seen from the flow information that the busier links account for use by general through-traffic. A comparison between the 2022 and 2032 Do Minimum SATURN results demonstrate that the flows through the area are expected to substantially increase over time on the majority of links even without Peel Hall development traffic i.e. 200vph or around 2,000vpd.
- 9.6.6 The data illustrates development traffic impact to be very low on Sandy Lane and Howson Road (one vehicle every two to four minutes), with low increases of around 40 to 80vph on Cotswold Road, Greenwood Crescent and Statham Avenue i.e. around one vehicle per minute. Larger impacts are forecast on Cleveland Road and Sandy Lane West of around 110 to 170vph (two to three vehicles per minute) increasing to between 250 to 450vph Capesthorpe Road and Poplars Avenue i.e. four to seven vehicles per minute.
- 9.6.7 Furthermore, as set out in TN/09, the recommendation within Manual for Streets is that the capacity threshold figure is at least 10,000vpd (for a 30mph road) and it can be seen that the AADT24 figures are generally below this guideline on all roads except for Sandy Lane West, Poplars Avenue and Capesthorpe Road, which form the main established through-traffic route. Therefore, from the Manual

for Streets guidelines it is considered that the figures forecast are acceptable. Additionally, this 10,000vpd minimum threshold could increase with a reduction in speed limit.

- 9.6.8 TA 79/99 states in paragraph 3.6 that, “..effective parking restrictions can lead to higher flows“ and it is considered that mitigation measures such as the provision of parking bays within the grass verges of these road links, to formalise what occurs at present and to create further off-street parking capacity to improve through-flow, will be beneficial (see HTP Technical Note TN/10 dated January 2020 contained in the Transport Assessment Addendum – text-only version contained at **Appendix T15**). Furthermore, the provision of developer funding to extend the 20mph speed restriction along the entire length of Poplars Avenue and also into Capesthorpe Road (between Poplars Avenue and Blackbrook Avenue) would be a beneficial highway safety improvement.
- 9.6.9 Whilst inevitably there will be an impact from development traffic on the amenity of the residents in the properties either side of the new accesses onto Poplars Avenue, both Poplars Avenue and the proposed access roads are designed to the appropriate standards i.e. Poplars Avenue is currently a 7.3 metre wide UAP3 road and will remain so apart from local widening to accommodate the access junction. The new access road will also be a road type UAP3.
- 9.6.10 Therefore, in highway terms although the percentage increase in traffic is high on some links the impact of the development traffic particularly on the area to the south, combined with the measures set out in HTP Technical Note TN/10 should be considered acceptable.
- 9.6.11 The change of magnitude varies on the links at the site access and across the wider highway network. However, in terms of significance, it is considered that the development impact will be overall **moderate to minor adverse significance**, given that the changes do not result in any of the links being over capacity.
- 9.6.12 The VISSIM modelling work is included within the Transport Assessment Addendum. In summary, the modelling shows a steady increase. There are some relatively minor, steady increases to delay, queue lengths etc. as a result of the growth in background traffic and also in terms of specific development related traffic.
- 9.6.13 The average peak hour journey times are summarised for both northbound and southbound traffic during the AM peak, for each future year scenario. For both northbound and southbound traffic travelling on the A49, there is not any sort of statistically noticeable impact until 2032. In the PM peak, the development has no real impact on travel times along the A49.
- 9.6.14 The main issue encountered by the VISSIM model appeared to be the level of traffic (particularly turning movements) forecast through the A49 Newton Road priority junction with Golbourne Road in all scenarios. This was mitigated for with the provision of a ghost right turn lane at this junction, including minor widening works.

9.6.15 The impact on the M62 Junction 9 in the Peel Hall WMMTM16 is forecast as 86 development trips in the AM peak hour and 35 in the PM peak hour. This is not considered to be a significant level of impact and the VISSIM shows that development impact on the M62 Junction 9 is minimal. Therefore, no mitigation measures are proposed.

Predicted Impact – Highway Network (Junctions)

9.6.16 The off-site junctions to be considered for further detailed modelling following review of the Peel Hall WMMTM16 outputs and a meeting with the Council, are:

- i. Golborne Road/Myddleton Lane
- ii. Delph Lane/Myddleton Lane
- iii. A49 M62 Junction 9 roundabout*
- iv. A50/Hilden Road roundabout and A50/Poplars Avenue
- v. A50/Hallfields Lane
- vi. A49/A50/Hawleys Lane crossroads*
- vii. A49/JunctionNINE Retail Park*
- viii. Blackbrook Avenue roundabout with Enfield Park Road and Ballater Drive
- ix. Blackbrook Avenue roundabout with Enfield Park Road and Capesthorpe Road
- x. Poplars Avenue roundabout with Capesthorpe Road
- xi. Cromwell Avenue/Calver Road linked with Sandy Lane West/A49 roundabout*

9.6.17 The junctions above with asterisks are modelled within the VISSIM as agreed with the Council's highway officer. The analysis for the other seven junctions has been carried out using the Junctions 9 package and LinSig.

9.6.18 **Table 9.6.1** below summarises the impact of development traffic at the site access junctions in 2032.

Table 9.6.1: Site access junction modelling results 2032

Junction	AM Peak Hour			PM Peak Hour		
	Max RFC	Queue Length (veh)	Delay (sec)	Max RFC	Queue Length (veh)	Delay (sec)
Mill Lane/ Blackbrook Avenue R/A	57%	2	7	43%	1	5
Poplars Ave. (central)	15%	1	10	20%	1	11
Poplars Ave. (west)	16%	1	9	10%	1	8
Mill Lane/ Delph Lane	30%	1	16	22%	1	15

9.6.19 From the above table it can be seen that the site access junctions work well within capacity and therefore in terms of significance it is considered that the impact overall will be of **minor adverse significance**.

9.6.20 **Table 9.6.2** below summarises the impact of development traffic at key junctions for 2032.

Table 9.6.2: Off-site access junction modelling results 2032

Junction	Do Minimum			Do Something		
	Max RFC/DoS	Queue Length (veh)	Delay (sec)	Max RFC	Queue Length (veh)	Delay (sec)
Golbourne Rd/ Myddleton La	112%	83	433	115%	103	536
Myddleton La/ Delph La	148%	103	1120	187%	164	2012
Hilden Road/ A50 R/A	100%	23	76	110%	64	180
Hilden Road/ A50 R/A linked with Poplars Ave.	-	53	158	-	94	293
Hallfields Rd/ A50	85%	-	-	97%	-	-
Blackbrook Ave./ Enfield PR/ Ballater	38%	1	4	62%	2	6
Blackbrook Ave./ Enfield Park Road/ Capesthorpe Rd	42%	1	6	82%	5	16
Poplars Ave./ Capesthorpe Rd	51%	1	9	79%	4	22

9.6.21 From the above table it can be seen that the development impact at off-site junctions varies, with the junctions close to the site such as Blackbrook Avenue and Capesthorpe Road shown to operate within capacity in 2032, but that unsurprisingly the development traffic impacts those junctions on the wider highway network that are shown to be at or above capacity in the Do Minimum scenario in any event. Proposed mitigation measures are contained in **Appendix T10** and include proposals at the following junctions:

- i. Golbourne Road/Myddelton Lane
- ii. Myddelton Lane/Delph Lane

9.6.22 Therefore, in terms of significance it is considered that the impact overall will be of a **minor adverse significance**.

Predicted Impact – Bus Passengers

- 9.6.23 It has been agreed in a Memorandum of Understanding with Warrington's Own Buses that the development site can be served by bus and that they propose to extend service 25 into the site in the east, and service 20 into the site from Poplars Avenue. It is intended to operate these extended services on the same frequency as the current level of service; service 25 at two per hour Monday to Saturday and service 20 at frequencies of up to every 10 minutes Monday to Friday and every 12-13 minutes on Saturday. The service 20 is one of Warrington's Own Buses flagship services and it is considered that this will be supported further by the new development as well as offer new residents a real alternative travel mode choice to the private car.
- 9.6.24 These extended bus service will increase capacity of the bus services available between the site and the surrounding area and Warrington town centre to the south. Therefore, it is considered that the provision of these service extensions will result in a medium magnitude of change.
- 9.6.25 Compared to the existing situation the proposed bus service represents a significant increase in the level of bus accessibility for future residents of the site. In terms of impact it is considered to be **major beneficial significance**.

Predicted Impact – Pedestrians and Cyclists

- 9.6.26 The site currently attracts dog walkers and recreational walkers using the PRow, Mill Lane playing fields and Radley Common. The proposed development will provide significant new pedestrian and cycle routes through the site which will link into the existing network, and also resurface the existing PRow to provide betterment to all users including children, those with pushchairs, wheelchair users and those with mobility impairments. Within the development there are proposals for open space and the pedestrian routes will be designed to provide access to this for residents of the surrounding area as well as future residents of the Peel Hall site.
- 9.6.27 It is considered that the magnitude of change will be medium as the footway and cycleway network will be enhanced across the site. Therefore, the significance of impact will be of **major beneficial significance**.

The Mitigation Measures

- 9.6.28 The proposed mitigation and analysis is set out in the Transport Assessment Addendum the following measures are proposed:
- i. A full and comprehensive Travel Plan supported by extensive travel plan measures, to enhance and support sustainable travel of future residents.
 - ii. An effective bus mitigation strategy based on extending two existing bus services into the site, in the east and south.

- iii. A50 Orford Green/Poplars Avenue – development impact at this junction was previously addressed through proposed engineering measures to increase the circulatory to two lanes (as built). However, this capacity restriction was part of a highway safety scheme and as such, instead of mitigation measures at the junction it is proposed to, provide a contribution towards traffic calming measures within the area to the immediate south of the development site.
- iv. Provide funding for an extended 20mph speed limit through Poplars Avenue and Capesthorpe Road to improve highway safety in the area to the south.
- v. Provision of uncontrolled dropped kerb pedestrian crossing points with tactile paving across arms of all roads intersecting with Poplars Avenue and upgrade existing locations for pedestrians to cross Poplars Avenue to promote attractive pedestrian routes, enhance highway safety and assist pedestrians with crossing movements.
- vi. Provision of cycle-friendly measures on Poplars Avenue such as painting cycle markings on carriageway near junctions to warn motorists of cycles. Also, the provision of cycle warning signing where suitable poles for doing so at key areas such as the approaches to the Poplars Avenue/Capesthorpe Road roundabout.
- vii. Potential to provide parking within the highway verges at locations along Poplars Avenue and Capesthorpe Road to improve free flow for vehicles and safety for cyclists, should this be considered necessary by the Inspector.
- viii. A49/A50/Hawleys Lane signal junction – provide a contribution to upgrade the signal junction to MOVA operation (to cover controller, additional loops and testing).
- ix. A50/Hallfields Road signal junction – provide a contribution to upgrade the signal junction to MOVA operation (to cover controller, additional loops and testing).
- x. A49 Newton Road/Golbourne Road – provide a scheme of widening and a ghost right turn lane if not provided by other committed schemes.
- xi. Golbourne Road/Myddleton Lane - proposed provision of Keep Clear markings on the southbound A49 arm across the Golbourne Road arm to improve junction performance by removing obstructions to the A46 right-turning movement.
- xii. Myddleton Lane/Delph Lane – proposed signal junction.
- xiii. Birch Ave/A49 – proposed provision of Keep Clear markings on the A49 nearside southbound lane across the Birch Avenue junction.

9.6.29 The proposed indicative mitigation measures for points (iv), (vii) and (x-xiii) above are illustrated on the plans contained in **Appendix T10**.

9.6.30 The mitigation measures will improve the operation of the junctions. Supporting modelling work is contained in the Addendum Transport Assessment. In summary, it is considered that these junctions will experience **moderate beneficial significance** as part of the mitigation package with the development at Peel Hall.

- 9.6.31 It is considered from a review of the traffic data that those junctions and links on the wider highway network without mitigation will experience **minor adverse significance** as part of the mitigation package with the development at Peel Hall.
- 9.6.32 As well as the proposed alterations to bus services providing a genuine choice for travel, additional measures such as the introduction of Travel Plans for the various land uses will be provided and this is expected to include, for example, subsidised bus travel and cycle purchase discounts. The implementation of Travel Plan measures will reduce congestion and encourage healthier travel choices.

The Residual Impacts - Existing Residents and Users of the Local Area

- 9.6.33 The local residents will have access to a new local centre and primary school, as well as better access to bus services to and from Birchwood and improved cycle and footway networks. However, there will be more traffic on the highway network as a result of the Peel Hall development. Overall there is likely to be a direct permanent long-term residual effect on existing local residents.
- 9.6.34 It is therefore considered that there will be a medium to high magnitude of change for existing residents and users of the local area, resulting in a **moderate beneficial significance** of impact overall.

The Residual Impacts - Future Residents

- 9.6.35 It is considered that for future residents of the Peel Hall site there will be a **major beneficial significance** of impact due to the range of facilities that will be on site and the range of sustainable transport choices available.

9.7 Summary

- 9.7.1 The Peel Hall site is located on the northern edge of Warrington, adjacent to the existing residential areas of Hulme, Blackbrook, Cinnamon Brow and Houghton Green. It is bounded by the M62 to the north, Mill Lane to the east, Poplars Avenue to the south and Birch Avenue to the west. At times during the peak periods congestion can occur along the main corridors in the area including M62, Winwick Road, Sand Lane West, Long Lane, Blackbrook Avenue and Birchwood Way, as well as elsewhere.
- 9.7.2 The Transport Assessment considers all modes of travel and the demands that the proposed development will place on transport infrastructure. The study area covers a large part of the local transport network including pedestrian and cycle links to the surrounding areas as well as public transport services and facilities.
- 9.7.3 The site is served by very good existing bus services and at peak times these routes are busy, especially closer to the centre of Warrington. The site is also served by existing PRoW that currently

attracts mainly dog walkers and occasional recreational walkers. Facilities for cyclists in the vicinity of the site are limited to shared footways/cycleways and advance stop lines at traffic signals.

- 9.7.4 It is proposed that the main vehicular accesses to the development will be provided from the Mill Lane arm of the Blackbrook Avenue/Ballater Drive/Mill Lane/Enfield Park Road roundabout junction and from Poplars Avenue. Additional access is provided from Mill Lane, Birch Avenue and a second access on Poplars Avenue. Access to the improved sports pitches will be from the existing access on Grasmere Avenue.
- 9.7.6 A high level of connectivity for pedestrians and cyclists will be provided through the site and connections will be made to the existing pedestrian routes around the site, and enhanced by the additional accesses at Poplars Avenue and Mill Lane/Blackbrook Avenue.
- 9.7.7 A Memorandum of Understanding has been agreed between the developer and Warrington's Own Buses regarding how best to serve the Peel Hall site by bus through diverting the existing 25 and 20 routes into the proposed development. During the construction phase it is proposed that first existing service 25 would be extended into the easterly part of the site from Blackbrook Avenue, followed by service 20 from Poplars Avenue to the south. These services will offer Peel Hall residents regular bus connections for Warrington Town centre, Warrington Central Railway Station and Bus Interchange/Shopping Centre, Birchwood Rail Station and Business Park/Shopping, Warrington Vale Royal and Priestley College as well as the Orford Jubilee Hub and Winwick Road retail parks. The developer will provide funding for the first five years to establish the services. Given these existing services it is expected that these route extensions will be profitable.
- 9.7.8 The assessment work is based on the Council's WMMTM16, cordoned for the Peel Hall study area; the data from which has been analysed and then used to model individual junctions to further test the impact of the development as well as provide a VISSIM corridor model for the A49.
- 9.7.9 During the construction phase each site access junction is expected to have HGV construction traffic associated with it, although it is anticipated that the Birch Avenue construction traffic will access the site via the Poplars Avenue (west) access, rather than through Birch Avenue. The anticipated route for construction traffic is expected to be via M62 Junction 9, A49 Winwick Road, A50 Long Lane, Birchwood Way, then either Poplars Avenue or Blackbrook Avenue and Mill Lane.
- 9.7.10 During the construction phase the predicted impact is expected to be:
- i. Highway – minor to moderate adverse significance.
 - ii. Bus – minor beneficial significance
 - iii. Pedestrians and Cyclists - minor to moderate adverse significance
 - iv. Residual - negligible to minor adverse significance
- 9.7.90 During the operational phase the predicted impact is expected to be:

- i. Highway Links Adjacent to Site – moderate to minor adverse significance.
- ii. Site Access Junctions – minor adverse significance
- iii. Wider Highway Network with Mitigation – moderate beneficial significance
- iv. Wider Highway Network Not Requiring Mitigation – minor adverse significance
- v. Bus – major beneficial significance
- vi. Pedestrians and Cyclists – moderate to major beneficial significance
- vii. Residual - moderate to major beneficial significance

10.0 CULTURAL HERITAGE AND ARCHAEOLOGY

10.1 Introduction

- 10.1.1 This chapter has been prepared by Nexus Heritage. It assesses the likely significant environmental effects in relation to cultural heritage and archaeology associated with the proposed development. Archaeology is the study of human history and prehistory through the excavation of sites and the analysis of artefacts and other physical remains. Cultural heritage is the legacy of physical and intangible attributes of a group or society that are inherited from past generations. For the purposes of this assessment, archaeological assets can be considered as buried remains in the forms of deposit, structures and artefacts and cultural heritage can be considered as upstanding attributes such as historic buildings, monuments, hedgerows, historic landscapes, and battlefields.
- 10.1.2 The structured cultural heritage and archaeological assessment herein provided is derived from a full and comprehensive examination of data related to designated and undesignated archaeological sites and monuments, historic landscape, hedgerows, historic buildings, historic parks and gardens, Conservation Areas, Registered Battlefields and World Heritage Sites and benefits from asset mapping drawn from detailed on-site observations, documentary research and on-site investigations. The assessment is based on the description of the proposed development as set out at Section 2.5 of this report and as shown on the Parameters Plan. The approach has been adopted in the spirit of the EIA Directive², to aid decision making and to ensure that members of the public concerned are able to participate.
- 10.1.3 The Assessment Site is located between the M62 and Poplars Avenue. The following sections provide a summary on the legislation, policy and guidance that is of relevance to the assessment of cultural heritage and archaeology.
- 10.1.4 The Cultural Heritage and Archaeology Chapter of the Environmental Statement (ES) assessed the likely significant effects of the proposed development with respect to cultural heritage and archaeological assets.
- 10.1.5 This Chapter outlines the outcome of the additional assessment work on the potential effect on cultural heritage and archaeological assets and where relevant supersedes the conclusions reached in the Cultural Heritage Chapter and Archaeology of the ES.

10.2 Legislation

- 10.2.1 At an international level there are two principal agreements concerning the protection of the cultural heritage and archaeological resource – the UNESCO *Convention Concerning the Protection of World*

*Cultural and Natural Heritage*¹ and the *European Convention on the Protection of the Archaeological Heritage*², commonly known as the Valetta Convention. The latter was agreed by the Member States of the Council of Europe in 1992, and also became law in 1992. It has been ratified by the UK, and responsibility for its implementation rests with Department for Culture Media and Sport.

- 10.2.2 At a national level the principal legislation governing the protection and enhancement of archaeological assets is the *Ancient Monuments and Archaeological Areas Act*³ 1979. The 1979 Act provides protection to Scheduled Ancient Monuments. The consent of the Secretary of State for Culture, Media and Sport is required for works of demolition, destruction to or damage to a Scheduled Ancient Monument. With respect to the cultural heritage of the built environment the *Planning (Conservation Areas and Listed Buildings) Act*⁴ 1990 applies. The Act sets out the legislative framework within which works and development affecting listed buildings and conservation areas must be considered. This states that:-

“In considering whether to grant planning permission for development which affects a listed building or its setting, the local planning authority or, as the case may be, the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses” (s66(1))

Other known sites of cultural heritage/archaeological significance can be entered onto county-based Historic Environment Records under the *Town and Country Planning Act*⁵ 1990.

10.3 National Planning Policy

- 10.3.1 The treatment of cultural heritage and archaeology within the planning system is governed by the *National Planning Policy Framework*⁶ (NPPF). Various principles and policies related to cultural heritage and archaeology are set out in the NPPF which guide local planning authorities with respect to the wider historic environment.

The following paragraphs from NPPF are particularly relevant and are quoted in full:

“In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets’ importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. where a site on which development is proposed includes or has the

¹ UNESCO, 1972, *Convention Concerning the Protection of the World Cultural and Natural Heritage*

² Council of Europe, 1992, *European Convention on the Protection of the Archaeological Heritage*

³ Great Britain. *Ancient Monuments and Archaeological Areas Act* Elizabeth II. Chapter 46, (1979) London: The Stationery Office.

⁴ Great Britain. *Planning (Conservation Areas and Listed Buildings) Act*. Elizabeth II.(1990), London: The Stationery Office

⁵ Great Britain. *Town and Country Planning Act*. Elizabeth II.(1990), London: The Stationery Office

⁶ Department for Communities and Local Government, 2012, *National Planning Policy Framework*.

potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.” Para 128

“Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this assessment into account when considering the impact of a proposal on a heritage asset, to avoid or minimise conflict between the heritage asset’s conservation and any aspect of the proposal.” Para. 129

“In determining planning applications, local planning authorities should take account of: the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation; the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and the desirability of new development making a positive contribution to local character and distinctiveness.” Para. 131

“When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset’s conservation. The more important the asset, the greater the weight should be. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification. Substantial harm to or loss of a grade II listed building, park or garden should be exceptional. Substantial harm to or loss of designated heritage assets of the highest significance, notably scheduled monuments, protected wreck sites, battlefields, grade I and II listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional.” Para. 132*

“The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly non designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.” Para. 135

10.4 Local Planning Policies

- 10.4.1 At the local level, planning considerations are guided by Policy QE 8 (Historic Environment) of Warrington’s Local Plan Core Strategy⁷ (adopted 2014) which states:

⁷ Warrington Borough Council, 2014, *Local Plan Core Strategy*

The Council will ensure that the fabric and setting of heritage assets, as set out below, are appropriately protected and enhanced in accordance with the principles set out in National Planning Policy.

Scheduled Monuments

Listed Buildings

Conservation Areas

Areas of Known or Potential Archaeological Interest

Locally Listed Heritage Assets

The Council and its partners will aim to recognise the significance and value of historic assets by identifying their positive influence on the character of the environment and an area's sense of place; their ability to contribute to economic activity and act as a catalyst for regeneration; and their ability to inspire the design of new development.

Heritage Assets such as buildings, structures and sites which are valued as good examples of local architectural styles or for their historic associations, are included on a local list produced by the Council. The buildings, structures and sites included on this list are detailed in Appendix 4.

To be included on the local list, an asset should be substantially unaltered and retain the majority of its original features and either:

- 1. Be a good example of a particular local asset type, craftsmanship, architectural quality, style or detailing, or*
- 2. Display physical evidence of periods of local economic, technical or social significance, well-known local people or historic events*

Development proposals which affect the character and setting of all heritage assets will be required to provide supporting information proportionate to the designation of the asset which;

- adopts a strong vision of what could be achieved which is rooted in an understanding of the asset's significance and value, including its setting;*
- avoids the unnecessary loss of and any decay to the historic fabric which once lost cannot be restored;*
- recognises and enhances the asset's contribution to the special qualities, local distinctiveness and unique physical aspects of the area;*
- fully accords with the design principles outlined elsewhere within the Local Planning Framework;*
- includes suitable mitigation measures, including an appropriate desk-based assessment and where necessary field evaluation and publication, for areas with known or potential archaeological interest.*

- ensures the knowledge and understanding of the historic environment is available for this and future generations. The evidence arising from any investigations should be publicly accessible through the Historic Environment Record and the local museum.

Applications for new development will also be required to take all reasonable steps to retain and incorporate non-statutorily protected heritage assets contributing to the quality of the borough's broader historic environment.

10.5 Guidance

The professional guidance set out in the ES (10.5) remains valid. There has been one minor amendment to the Chartered Institute for Archaeologists *Standard and Guidance for Historic Environment Desk-Based Assessment*. The ES was prepared with reference to the 2014 edition of this document. A revised edition was issued by the Chartered Institute for Archaeologists in January 2017. The minor amendment does not invalidate the methodological approach utilised or conclusions drawn in the ES.

- 10.5.1 The relevant guidance for this assessment includes *Guidelines for Environmental Impact Assessment*⁸, the Chartered Institute for Archaeologists *Standard and Guidance for Historic Environment Desk-Based Assessment*⁹, *Standard and Guidance for Archaeological Geophysical Survey*¹⁰ and *Standard and Guidance for Archaeological Field Evaluation*¹¹.

10.6 Methodology

Assessment Approach Methodology

- 10.6.1 The overall objective of the cultural heritage and archaeology assessment is to provide a realistic assessment of likely and significant effects with reference to cultural heritage and archaeological assets and to allow for an informed decision-making process, as per EIA Directive (85/337/EEC). The directive is enacted in England and Wales by the *Town and Country Planning (Environmental Impact Assessment) Regulations*¹² 2011, as amended. The requirements of the Regulations form the basis of the assessment work undertaken throughout the ES.

⁸ Chartered Institute of Environmental Management and Assessment, 2004, *Guidelines for Environmental Impact Assessment*

⁹ Chartered Institute for Archaeologists, 2014, *Standard and Guidance for Historic Environment Desk-Based Assessment*

¹⁰ Chartered Institute for Archaeologists, 2014, *Standard and Guidance for Archaeological Geophysical Survey*

¹¹ Chartered Institute for Archaeologists, 2014, *Standard and Guidance for Archaeological Field Evaluation*

¹² Great Britain, 2011, *Town and Country Planning (Environmental Impact Assessment) Regulations*

10.6.2 The aim of the assessment is to:

- Identify all known and potential designated and non-designated cultural heritage and archaeological assets within and in the vicinity of the proposed development that may be affected by the proposed development and evaluate their significance;
- Outline any likely environmental impacts of the proposed development on cultural heritage and archaeological assets, likely to be affected, assessing the magnitude of any identified impacts;
- Assess the effects of the proposed development upon those cultural heritage and archaeological assets, categorising the scale of effect against significance;
- Identify where relevant any mitigation measures and assess the likely residual impact after such mitigation on the identified cultural heritage and archaeological assets

10.7 Assessment Site and Assessment Area

10.7.1 All designated and non-designated cultural heritage and archaeological assets, both within the proposed development (the Assessment Site) and within approximately 500m of the Assessment Site boundary of the proposed development (the Assessment Area) have been identified. The cultural heritage and archaeological assets in the Assessment Area have been identified and considered in order that the known and potential cultural heritage and archaeological assets of the Assessment Site can be placed in the broader context of the known knowledge-base of the area and a 500m buffer for an assessment area is considered adequate for assessment purposes. However, certain assets which, although located beyond the Assessment Area, have also been taken into account and have been considered during this assessment process using professional judgment and discrimination. It is considered that the assessment process, whilst it needs to be conducted with reference to a framework defined by geographical limits, should not be rigidly constrained by such a framework and particular archaeological and cultural heritage assets should not be omitted from the assessment solely on a consideration of distance from the Proposed Development. With this in mind certain designated heritage assets beyond the Assessment Area have been taken into account.

10.7.2 The proposed development extends over approximately 63ha of land to the north of Warrington, with the Site centered at approximately Ordnance Survey grid reference SJ 61438 91723, mainly within the civil parish of Winwick. The Assessment Site is aligned east-west and lies between 10 and 15m AOD sloping from the north towards Warrington. The site comprises rough, unmanaged pasture, field boundaries and some woodland. The northern boundary of the Site is provided by the M62 motorway, to the south-west the boundary is formed by the suburb of Hulme. To the south the Site is bounded by development on Windermere Avenue and to the east the Site is bounded by the built environment of Houghton Green. There are two enclaves surrounded by the Assessment Site which are not included within the planning application area – Peel Hall Farm and Peel Cottage.

10.7.3 The British Geological Survey Geological ¹³ records for this area superficial deposits of glacio-fluvial deposits of Devensian date – sand and gravel – formed up to 2 million years ago in the Quaternary Period in a local environment dominated by ice age conditions. The bedrock geology for the north-western half of the Site is mapped as Chester Pebble Beds – a pebbly gravelly sandstone formed approximately 246-251 million years ago in the Triassic Period, in a local environment formed by rivers. The bedrock underlying the south-eastern half is the Wilmslow Sandstone Formation – a sandstone sedimentary bedrock formed in the same period and same environment.

10.8 Surveys

10.8.1 The baseline conditions have been established from a range of sources, which include a comprehensive walk-over of the Site, a desk-based assessment¹⁴, and an archaeological evaluation by means of trial trenching¹⁵. The impacts of the assessment scheme on that baseline are then assessed and the significance of these impacts is expressed. Consideration of mitigation is explained and the existence of any residual impacts and their significance are also assessed. Consideration is given to whether the impacts are short term or long term; permanent or temporary; and whether they will occur in the construction or operational phases of the development. The methodology focuses on the details of a cultural heritage and archaeology assessment and the detailed methodology is provided below. This chapter has been prepared by Gerry Wait, Director of Nexus Heritage and Member of the Chartered Institute for Archaeologists and Anthony Martin, a Director of Nexus Heritage and Member of the Chartered Institute for Archaeologists.

10.9 Data Collection and Review

10.9.1 In order to identify and examine the cultural heritage and archaeological assets within the Assessment Site and the wider Assessment Area a preliminary survey of source material was undertaken by means of consultation with a variety of data holders. The results of the desk study were complemented by further elements of work – a walk-over survey in order to examine the ground surface within the Site for evidence of cultural heritage and archaeological features and previous impacts to the land which may have compromised, disturbed or removed archaeological assets and a geophysical survey and a trial trench evaluation. The walk-over survey also included perambulations in the wider Assessment Area to establish general lines of sight towards, from and across a variety of locations which form the setting of the cultural heritage and archaeological assets. The results of all elements of work have been used to prepare this chapter.

10.9.2 The Cheshire Historic Environment Record (CHER) was consulted to obtain the latest information on known sites and features of archaeological interest within the Assessment Site and the Assessment Area. The CHER is the recognised regional repository of archaeological data. The CHER data has

¹³ <http://www.bgs.ac.uk/data/mapViewers/home.html>

¹⁴ CPM Environmental Planning and Design, 1999. *Desk-Based Assessment - Land at Peel Hall, Warrington, Cheshire*.

¹⁵ Lancaster University Archaeological Unit, 2001, *Peel Hall, Warrington, Cheshire – Evaluation Report*

been supplemented and cross-referenced by means of examination of historic mapping of the assessment area, aerial photographs of the Assessment Site and published works such as archaeological/historic journals issued by learned societies and reference books on the archaeology and history of the area. Searches were also made of data in the Cheshire Record Office (CRO), the Lancashire Record Office (LRO), Warrington Museum & Art Gallery (WM&AG), Warrington Library (WL) and a number of on-line sources such as the Heritage Gateway database, the National Heritage List, and the National Monuments Record's *PastScape* historic environment database. A comprehensive map-regression exercise was undertaken and the historic maps identified for reproduction are provided in **Appendices ARC 5 to 15** inclusive.

- 10.9.3 The Historic Environment Records Officer and the Development Control Archaeologist of Cheshire Archaeology Planning Advisory Service (CAPAS) of Cheshire Shared Services were consulted with respect to information on archaeological and cultural heritage assets within the Assessment Area and to discuss the likely effect of the development on any of these assets and possible mitigation measures which would be suitable.

10.10 Assessing the Value of Cultural Heritage and Archaeological Assets

- 10.10.1 Cultural heritage and archaeological assets may be valued for a number of reasons: based on criteria such as rarity or degree of preservation and the EIA process identifies this value as 'importance'. The detailed outcome of the assessment of importance is provided below for the Assessment Site. Some resources, not remarkable in terms of rarity or state of preservation terms, may nonetheless be considered to have value for a particular community, especially if they are accessible and contribute to local distinctiveness, identity or economy. For the purposes of this assessment, archaeological assets have been considered principally with reference to their value to the quality and understanding of England's history, as set out in national, legislation priorities and frameworks. However, the international, regional and local perspective has also been taken into account. Identified archaeological assets are characterised according to their intrinsic importance. A six-fold scale based on the *Design Manual for Roads and Bridges*¹⁶ has been utilised in order to characterise the value of identified archaeological assets, incorporating any relevant designations or best-practice, so that any identified sites can be gauged according to these and assigned a value level as defined in **Table 1**.

¹⁶ Highways Agency, 2009, *Design Manual for Roads and Bridges – Volume 11 – Environmental Assessment*

Value	Equivalence
Very High	World Heritage Sites (including nominated sites). Archaeological sites or buildings or historic areas of acknowledged international importance Historic landscapes of international value, whether designated or not. Extremely well preserved historic landscapes with exceptional coherence, time-depth, or other critical factor(s).
High	Scheduled Ancient Monuments Undesignated archaeological assets of designable quality and importance. Grade I and Grade II* Listed Buildings Other listed buildings that can be shown to have exceptional qualities in their fabric or historical associations not adequately reflected in the listing grade Conservation Areas containing very important buildings Undesignated structures of clear national importance Grade I and Grade II* Registered Parks and Gardens Undesignated historic landscapes of outstanding interest high quality and importance, and of demonstrable national value exhibiting considerable coherence, time-depth or other critical factor(s)
Medium	Archaeological remains of regional/county importance. Grade II Listed Buildings Historic (unlisted) buildings that can be shown to have exceptional qualities in their fabric or historical associations. Conservation Areas containing buildings that contribute significantly to its historic character. Grade II Registered Parks and Gardens Undesignated historic landscape character areas of regional interest averagely well-preserved with reasonable coherence, time-depth or other critical factor(s) Important hedgerows Historic townscape or built-up areas with important historic integrity in their buildings, or built settings (e.g. including street furniture and other structures).
Low	Archaeological remains of district/local importance and/or those sites compromised by poor preservation and/or poor survival of contextual associations undesignated historic landscapes of local relevance Undesignated parks and gardens of local relevance Historic landscapes the value of which is limited by poor preservation and/or poor survival of contextual associations and hedgerows Locally Listed Buildings Historic (unlisted) buildings of modest quality in their fabric or historical association. Historic Townscape or built-up areas of limited historic integrity in their buildings, or built settings (e.g. including street furniture and other structures). Robust undesignated historic landscapes with importance to local interest groups. Undesignated historic landscapes whose value is limited by poor preservation and/or poor survival of contextual associations.
Negligible	Assets which have been damaged or destroyed to the extent that they have very little or no surviving archaeological interest or assets of no historic/architectural note. Landscapes of little or no historic interest. Buildings of no architectural or historical note; buildings of an intrusive character.
Unknown	Assets for which insufficient information is available to identify importance or assets with little or no significant historic, architectural, archaeological or artistic interest

Table 1: Factors for Assessing the Value of Heritage Assets (based on DMRB, Vol. 11 Environmental Assessment, Section 3, Part 2, HA 208/7, Cultural Heritage)

Identifying Impact Criteria

10.10.2 A direct impact is a physical effect on an asset arising at the same time as and occurring as a consequence of physical changes to the asset. For example, groundworks associated with construction directly disturbing archaeological remains. With respect to archaeological assets the pathway of a direct impact usually leads to a predictable outcome – a greater or lesser physical impact

which is detrimental to the preservation and survival of a part or whole of an asset. However, the impact pathway is nevertheless significant because pathways lend themselves to varying approaches to mitigation such as elimination, prevention, control, compensation and offsetting (see below). With respect to cultural heritage assets and archaeological assets impacts can also be indirect, in that the setting of an asset, within or beyond the boundaries of a proposed development can be affected by the proposed development. In addition impacts are considered beneficial or adverse; reversible or irreversible; short, medium or long term; and temporary or permanent.

Identifying the Magnitude of Direct Impacts to Cultural Heritage and Archaeological Assets

10.10.3 For the purposes of assessing direct impacts to cultural heritage and archaeological assets the pre-eminent characteristic of the impact is the scale to which the impact alters the asset. This can be gauged by cross-referencing the potential impact activities with each known asset. In addition, the type of impact is judged in order to arrive at a magnitude. The scale ranges from negligible, through minor and moderate to major and the type of impact can be beneficial or adverse. A matrix can be completed which provides a rating based upon the scale and type of impact and extent or components of the assets affected. The magnitude of impact to individual assets is a matter of professional judgment and is based on a five-fold scale (major, moderate, minor, negligible and no change) based on the *Design Manual for Roads and Bridges*¹⁷. The range of impact magnitude is explained in **Table 2**.

Impact Magnitude	Description
Major Adverse	Total loss of asset
Major Beneficial	Comprehensive improvement to the asset through restoration or enhancement,
Moderate Adverse	Partial loss of or detrimental modification to the asset, but integrity of majority of asset remains
Moderate Beneficial	Improvement to asset condition/preservation through enhancement or protection,
Minor Adverse	Some measurable depreciation to the attributes and quality of asset
Minor Beneficial	Some measurable improvement to the attributes and quality of asset
Negligible Adverse	Very slight loss or detrimental alteration to asset
Negligible Beneficial	Very slight benefit to condition/preservation of asset
No change	No loss or alteration of asset, no discernible impact either adverse or beneficial

Table 2: Factors in the Assessment of Magnitude of Impact to Archaeological Remains (based on DMRB, Vol. 11 Environmental Assessment, Section 3, Part 2, HA 208/7, Cultural Heritage)

¹⁷ Highways Agency, 2009, *Design Manual for Roads and Bridges – Volume 11 – Environmental Assessment*

Determining the Significance of the Effect on Assets

10.10.4 The significance of the effect on assets is a combination of the importance of the assets and the magnitude of the impact. The significance of the effect is expressed using a nine-fold scale (Very Large, Large/Very Large, Moderate/Large, Moderate, Moderate/Slight, Slight/Moderate, Slight, Neutral/Slight and Neutral) based on the *Design Manual for Roads and Bridges*¹⁸. The required combination for identified remains has been undertaken with the aid of a matrix, as shown in **Table 3**, in order to assist judgements regarding importance and impact magnitude in order that a reasonable and balanced assessment of effect significance (either negative or positive) can be reached.

IMPORTANCE OF ASSET	Very High	Neutral	Slight	Moderate/Large	Large/Very Large	Very Large
	High	Neutral	Slight	Moderate/Slight	Moderate/ Large	Large/Very Large
	Medium	Neutral	Slight/ Neutral	Slight	Moderate	Moderate/ Large
	Low	Neutral	Neutral/ Slight	Slight/Neutral	Slight	Slight/ Moderate
	Negligible	Neutral	Neutral	Neutral/Slight	Slight/Neutral	Slight
	Unknown	Neutral	Neutral	Neutral/Slight	Slight/Moderate	Moderate/ Large
		No change	Negligible	Minor	Moderate	Major
MAGNITUDE OF IMPACT TO ASSET						

Table 3: Effect Significance Matrix for Assets (based on DMRB, Vol. 11 Environmental Assessment, Section 3, Part 2, HA 208/7, Cultural Heritage)

Limitations

10.10.5 The assessment of the cultural heritage and archaeological assets has been undertaken in the knowledge of the uncertainties that arise when trying to assess impacts on a resource that is not wholly known and is often poorly understood. It is acknowledged that there have been some previous recorded archaeological and historic assessments and surveys undertaken for certain locations within the Assessment Area, but such enquiries do not result in a comprehensive audit of all cultural heritage and archaeological assets in the area and there are weaknesses in the available information. It should be noted that the assessment is based in large part on information held in source repositories and published data, augmented by a walk-over survey, a geophysical survey and a trial trench evaluation. The source repositories and published data do not represent exhaustive sources of information on the presence/absence of cultural heritage and archaeological assets. With the exception of the walk-over

¹⁸ Highways Agency, 2009, *Design Manual for Roads and Bridges – Volume 11 – Environmental Assessment*

survey, geophysical survey and trial trench evaluation there has been no project specific archaeological field work undertaken on the Assessment Site. However, from the data available it is possible to quantify and qualify the known archaeological assets and to determine the potential for as yet unknown assets to be present. These factors have been taken into consideration during this Assessment. This information has in turn been considered against the pre-existing impacts to the Site which may have compromised the survival of any archaeological assets on the site. In order that reliable conclusions can be drawn from the categorisation of the impacts and effects, the data used to establish the nature of the impact has been reviewed with respect to the following criteria:

Confidence - how reliable is the data from a scientific and statistical perspective,

Assumptions - were any assumptions made in identifying potential impacts and if so what were they,

Limitations - what are the limitations of the data that could have an influence on the confidence and the description of the nature of the impacts?

10.10.6 With respect to the baseline data and the assessment process there is a high confidence level that the data upon which the work is based is of high quality. The baseline data is generated and maintained by regional or national agencies with a proven track record of data capture and curation and the attributes of the data in terms of veracity and impartiality can be considered to be high.

10.10.7 A number of assumptions have, however, been made as to the fact of and degree to which any archaeological remains may survive on the Assessment Site. The precautionary principle has been adopted in which it is assumed that there are some archaeological remains on the Site.

10.10.8 There are some compromising limitations on the data that could have an influence on the confidence and the description of the nature of the impacts. There were no limitations on the desk-based data collection exercise, other than the inherent weaknesses of the data set. For example, the actual identity and character of some of the archaeological assets identified by the CHER remain unknown or unproven and so assessing value and impacts becomes problematic. There were some limitations on the coverage of the archaeological trial trench evaluation undertaken in 2001, such as the exclusion of some areas of the Site due to ecological constraints. It should also be noted that the Site boundaries which defined the programme of archaeological evaluation undertaken in 2001 do not correspond with the boundaries of the current Assessment Site, which is larger and includes additional land parcels to the west and east which were not subject to evaluative trial trenching.

10.10.9 There is no meaningful limitation on the assessment of impacts represented by the proposed development as the impacts are derived from consideration of a proposal involving orthodox and previously used design and construction techniques.

10.11 Baseline Conditions

10.11.1 A review of the cultural heritage and archaeological assets in and around the proposed development site has been undertaken and the 2016 baseline remains, in the main, valid. Therefore, this section of the Environmental Statement remains broadly unchanged (10.11). However, in his consultation response to the Council regarding application 2016/28492, the Team Leader of Cheshire Archaeology Planning Advisory Service (CAPAS) drew particular attention to an area of undated ditches extending over an area of c. 50m by 50m in the north-east corner of the site, which may represent an area of earlier settlement. This area was included in the Environmental Statement under gazetteer no. 41 – an archaeological evaluation by means of trial trenches undertaken in 2001 – but not otherwise specifically identified. These undated ditches are of low importance.

10.12 Archaeology

10.12.1 A total of 34 undesignated heritage and archaeological sites (also known as monuments but identified as archaeological assets for the purpose of reporting) were identified for the purpose of assessment. Several of these assets are wholly or partially within the Assessment Site.

Gaz. No. 11 – Peel Hall Manor House and Moat – specifically the moat and the footprints of now-demolished buildings is within the Assessment Site. The current building at Peel Hall itself is out with the Assessment Site in an enclave, but the location of the moat and some now-demolished ancillary outbuildings are within the Assessment Site.

Gaz. No. 32: Cottage and Garden

Gaz. No. 33: Trackway

Gaz. No. 34: Marl Pits/Ponds/Turbary Pits

10.12.2 A total of nine archaeological events was identified within the Assessment Area – these are archaeological investigations and surveys and of these two are intimately associated with the Assessment Site – an archaeological desk –based assessment conducted in 1999 and an archaeological trial trench evaluation conducted in 2001. It should be noted that the Site is not wholly or partly within an Area of Special Archaeological Potential, an Area of Archaeological Potential or an Area of Archaeological Importance as recorded by the CHER.

Further details of the identified archaeological assets are provided in **Volume 3 Appendix ARC 1 and ARC 19**.

10.13 Baseline Conditions

Historic Landscape Character

- 10.13.1 A total of 14 individual Historic Landscape Character parcels was identified for the purpose of assessment. The vast majority of the Assessment Site is identified as an expanse of a single Character parcel recorded as 20th century field systems (Gaz. No.84), with a small area identified as post-medieval woodland plantation (Gaz. No. 78).

Details of the identified historic landscape character are provided in **Volume 3 Appendix ARC 3 and ARC 17**.

10.14 Historic Buildings and Structures

- 10.14.1 A total of 17 Listed Buildings was identified for the purpose of assessment. None of these buildings is within the Assessment Site. A total of 14 Locally Listed Buildings was identified for the purpose of assessment. None of these buildings is within the Assessment Site.

Details of the identified historic buildings and structures are provided in **Volume 3 Appendix ARC 2 and ARC 17**.

10.14.2 Hedgerows

The internal hedgerows have been assessed against the criteria included within the *Hedgerow Regulations*¹⁹, 1997, including their age, their relationship to boundaries between parishes existing before 1850, their relationship to archaeological features of a site that is noted on the CHER and their relationship to boundaries of pre-1600 estates or manors or field systems pre-dating the Enclosure Acts.

- 10.14.3 The ecological aspects of hedgerow habitat are detailed in Chapter 6 – Ecology. However, hedgerows have a historic and archaeological dimension as emphasised in *The Hedgerow Regulations*²⁰ 1997. There are two internal hedgerows within the Site (**Volume 3 Appendix ARC 3**) of particular interest. Both of these extend approximately north-south across the Site. Gaz. No. 89 is a length of hedgerow defining the relict boundary between the historic Townships of Arbury and Houghton and Gaz. No. 90 is a hedgerow defining the relict boundary between the historic Townships of Arbury and Winwick. Details of the identified hedgerows are provided in **Volume 3 Appendix ARC 17**.

- 10.14.4 The determination of a hedgerow as important under the *Regulations* includes consideration of archaeological and historic criteria. The identified hedgerows within the Assessment Site mark the boundary, or part of the boundary, of two historic (pre-1850) townships. There is no confirmatory evidence that the hedgerows on the Assessment Site mark the boundaries of the Manors of Winwick,

¹⁹ Great Britain, 1997, *The Hedgerow Regulations*, Statutory Instrument 1160, London: The Stationery Office

²⁰ Great Britain, 1997, *The Hedgerow Regulations*, Statutory Instrument 1160, London: The Stationery Office

Arbury and Houghton (which qualify as pre-1600 AD manors, but the hedgerows would be consistent with manorial boundaries which evolved into Township boundaries. The hedgerows do not incorporate an archaeological feature which is Scheduled Ancient Monument or a site recorded on the CHER. The hedgerows are not recorded in any document held at CRO or LRO as an integral part of a field system pre-dating the Inclosure Acts and are not part of or related to any building or feature associated with a field system pre-dating the Inclosure Acts.

10.14.5 On the basis that these two hedgerows have existed for longer than 29 years and mark part of the boundaries, of at least three historic townships, then they qualify as important. Together with the Moat at Peel Hall they are plotted on the parameters plan

10.15 Scheduled Ancient Monuments, Conservation Areas, Registered Battlefields, Registered Historic Parks and Gardens, UNESCO World Heritage Sites

10.15.1 There are a number of other designated heritage assets outside the Assessment Area and for the benefit of the Environmental Statement the nearest Scheduled Ancient Monument, Conservation Area, Registered Battlefield, Registered Park/Garden and UNESCO World Heritage Site have also been identified and mapped and details can be found in the and in **Volume 3 Appendix ARC 4 and ARC 17**.

10.16 Importance of the Assets

10.16.1 Each asset has been reviewed, its importance established and the importance rating is provided in and **Volume 3 Appendix ARC 17**. The nature and character of archaeological assets at the Site has been previously investigated, and some archaeological remains are known to exist but the fact of and degree of any archaeological remains in those portions of the Assessment Site not evaluated in 2001 remains unknown. There is a likelihood for disturbance to archaeological remains at the Assessment Site from ploughing. On balance it is probably safe to assume the survival of archaeological assets within the Assessment Site will be variable. The physical condition and state of preservation of any as yet unknown archaeological assets at the Site is unknown.

10.16.2 The known and potential archaeological assets within and in the vicinity of the Site relate to local and possibly regional traditions associated with Cheshire's development and with respect to the prehistoric period relate to national traditions of agricultural production, consumption and settlement. The known and potential archaeological assets within and in the vicinity of the Site are also representative of local and regional information associated with knowledge about communities, economy and culture in the broader prehistoric period.

10.16.3 The archaeological and cultural heritage assets in and around the Site have demonstrable historical association with known events relating to the political, economic, industrial, social, and cultural history on a local and regional scale. On the basis of the desk-based research, walk-over survey, and trial trench evaluation it is concluded that the Site has an archaeological potential, but as a consequence of ploughing, the potential of the Site is lessened for archaeological remains pre-dating the 20th century. Any remains, should they be present, would be of local and possibly regional significance.

10.17 Potential Effects

The proposed mitigation measures to be deployed in order to mitigate the significance of effect on cultural heritage and archaeological assets remain proportional, appropriate and valid and this section of the Environmental Statement remains unchanged (10.18), with the exception that the area of undated ditches would benefit from a programme of formal mitigation in the form of an archaeological strip and record exercise extending across an area measuring c. 50m by 50m to be followed by appropriate assessment, analysis, reporting, dissemination and archiving of the results.

10.17.1 Potential impacts to cultural heritage and archaeological assets may arise from the construction and operation of the proposed development and this assessment has been undertaken in order to examine the direct and indirect impacts to known and potential cultural heritage archaeological assets.

Impacts fall into both direct and indirect temporary and permanent categories:

Temporary (Indirect)

- Site clearance, demolition and accommodation works
- Movement and presence of associated construction vehicles and plant
- Compounds, site offices and welfare facilities
- Earthworks and construction of drainage infrastructure
- Earthworks and formation of practical development platforms/foundations
- Highways improvements and access from the site
- Emerging built form of residential units and primary school buildings
- Emerging landscaping measures

Permanent (Indirect)

- Completed highways realignment and access points;
- Completed built form including the residential units, primary school buildings, employment and local centre etc.
- Completed infrastructure and lighting
- Completed landscaping measures

Temporary (Direct)

- None

Permanent (Direct)

- Site clearance, demolition and accommodation works
- Ground works for compounds, site offices and welfare facilities
- Earthworks and construction of drainage infrastructure
- Earthworks and formation of practical development platforms/foundations
- Highways improvements and access to/from the Site

10.18 Project Design

The assessment of the effects resulting from the construction of the proposed development remain unchanged from those described in the ES Chapter (10.19) with the exception that an area of undated ditches extending over an area of c. 50m by 50m in the north-east corner of the site, which may represent an area of earlier settlement, corresponds with a proposed parcel of developable land as shown on the Indicative Landscape Components Plan. Therefore, area of undated ditches extending over an area of c. 50m by 50m in the north east corner of the site would be likely to be subject to an impact arising from the proposed development. The impact is characterised as major adverse and the effect is characterised as slight/moderate negative.

10.18.1 Mitigating responses are not proposed for any of the archaeological assets within the Assessment Area upon which no direct impact is predicted. For the archaeological assets on the Assessment Site upon which a direct impact is predicted a suite of mitigation actions are recommended.

10.18.2 For those archaeological and cultural heritage assets for which an indirect impact to setting has been predicted no formal mitigation is recommended as the magnitude of the impacts to settings and significance of the effect is marginally adverse and there is inherent mitigation in the quality of the design and layout of the proposed development. Details of the proposed development design are addressed in detail in the ES Parameters Plan (**Volume 3 Appendix APP 6**) and also in Section 2.5: Development Proposals. This sets out the more general information on inherent mitigation such as the quantum of uses, mix, and distribution and also the areas of open space and landscaping.

10.18.3 The proposals will incorporate the following mitigation in respect of heritage issues

- Re-instating the former alignment of important hedgerows where appropriate.

- Setting back of the development envelope in the parts of the site which would provide separation from the immediate settings of designated cultural heritage assets to ensure that potential impacts are minimised.

10.18.4 The landscape strategy set out in Section 8 above forms an integral part of the proposed development. Therefore, for the purposes of the assessment, an integrated approach to developing mitigation for impacts to settings of cultural heritage assets form a considered and deliberate aim of the proposed development.

10.18.5 The direct impacts identified for cultural heritage and archaeological assets represent impacts to the cultural heritage and archaeological resource with respect to the spirit and intent of *NPPF*²¹. Therefore, it is proposed that, a detailed programme will be prepared for mitigation works for the known and potential cultural heritage and archaeological assets that would be directly impacted upon as part of the process of discharge of conditions accompanying any planning permission. Its implementation could be secured by means of appropriately worded conditions applied to any planning permission for the proposed development. The proposed mitigation for the cultural heritage and archaeological assets on which impacts have been identified has been configured with reference to archaeological best practice and the relevant standards and guidance published by the Chartered Institute for Archaeologists. The impacts for which mitigation is proposed are direct impacts and it should be noted that there is no ability to mitigate (*sensu strictu*) for the direct loss of or disturbance to cultural heritage and archaeological assets, as such assets would not be able to return to their original state once disturbed. However, archaeological investigation reporting, publication and archiving may compensate for the loss of cultural heritage and archaeological assets where the proposed development affects them.

10.18.6 Where unavoidable direct impact to a cultural heritage or archaeological asset is considered acceptable by the local planning authority, policy allows that authority to direct the developer to record and advance understanding of the significance of the asset before it is lost, using planning conditions or other obligations as appropriate. The extent of the requirement should be proportionate to the nature and level of the asset's significance and this has been taken into account in the recommendations below.

10.18.7 The recommended mitigation for the proposed development takes the form of an archaeological excavation and/or watching brief on areas where historic data, the walk-over survey and the trial trench evaluation have indicated the presence or likely presence of archaeological remains. This would be followed by analysis of the findings, publication and dissemination of the results and deposition of the archive in line with archaeological practice. The archaeological excavation would be configured with

²¹ Department for Communities and Local Government, 2012, *National Planning Policy Framework*.

reference to the standard and guidance published by the Chartered Institute for Archaeologists²² with a contingency to respond to findings.

10.18.8 The recommended mitigation responses for cultural heritage and archaeological assets would not diminish the direct, physical impact upon the assets. However, they do ameliorate the impact by the creation of information and knowledge of public benefit and the implementation of investigations and recording operations are considered to be appropriate mitigation which would assuage the effect on cultural heritage and archaeological assets. The recommended mitigation responses are in line with guidance provided in NPPF²³ in that the facility exists for Local Planning Authorities to require developers to –‘*record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible.*’ NPPF, para. 141

10.19 Assessment of Effects

The assessment of the effects resulting from the construction of the proposed development remain unchanged from those described in the ES Chapter (10.19) with the exception that an area of undated ditches extending over an area of c. 50m by 50m in the north-east corner of the site, which may represent an area of earlier settlement, corresponds with a proposed parcel of developable land as shown on the Indicative Landscape Components Plan. Therefore, area of undated ditches extending over an area of c. 50m by 50m in the north east corner of the site would be likely to be subject to an impact arising from the proposed development. The impact is characterised as major adverse and the effect is characterised as slight/moderate negative.

10.19.1 Direct Impacts

Impacts to cultural heritage archaeological assets would arise from the proposed development so it is important to briefly describe the key aspects of the proposals. This proposed development is for housing with open space and associated infrastructure and access. In basic terms the development consists of activities such as ground preparation, modification and improvement, and the construction of new buildings, services and vehicle/pedestrian access and circulations routes and landscaping.

10.19.2 Previous Impacts

Previous activities at the Assessment Site need to be considered with respect to potential pre-existing impacts to archaeological assets before a discussion on the potential impacts to the archaeological assets represented by the proposed development. The most significant impact to the archaeological resource has been long-duration arable cultivation across much of the site. Plough action is acknowledged as a vector of detrimental impacts to sub-surface archaeological remains. There are

²² Chartered Institute for Archaeologists, 2008, *Standard and Guidance for Archaeological Excavation*

²³ Department for Communities and Local Government, 2012, *National Planning Policy Framework*.

acknowledged methodological approaches to test for plough interaction with sub-surface layers that would contain archaeological remains. However, determining how active the interaction is or the rate at which it is taking place are more difficult estimations. No previous attempts to test for plough interaction at the Assessment Site has been undertaken and so the fact of and degree of plough interaction is unknown.

10.19.3 Predicted Impacts to Cultural Heritage and Archaeological Assets (Pre-Construction)

Geotechnical investigations in the form of window sampling and boreholes have the potential to disturb archaeological remains – but the results of such investigations also provide valuable information on the sub-surface properties of use with respect to archaeology. The type, number and location of any intrusive geotechnical investigations have not yet been determined, however, the following cultural heritage and archaeological assets maybe impacted upon.

Gaz. No. 11: Peel Hall Manor House and Moat

Gaz. No. 32: Trackway

Gaz. No. 33: Cottage and Garden

Gaz. No. 34: Marl Pits/Ponds/Turbary Pits

Gaz. No. 89: Hedgerow

Gaz. No. 90: Hedgerow

10.19.4 Predicted Impacts to Cultural Heritage and Archaeological Assets (Construction)

The construction stage will include activities associated with a typical construction programme sequence. The following cultural heritage and archaeological assets will be Impacted upon.

Gaz. No. 11: Peel Hall Manor House and Moat

Gaz. No. 32: Trackway

Gaz. No. 33: Cottage and Garden

Gaz. No. 34: Marl Pits/Ponds/Turbary Pits

Gaz. No. 89: Hedgerow

Gaz. No. 90: Hedgerow

10.19.5 Predicted Impacts to Archaeological Assets (Operation)

There is scope for some direct impacts to archaeological assets during the use of the development as archaeological remains may be disturbed during building operations for extensions or further new buildings, roads and services. However, these impacts would be dealt with by means of the operation of the planning process at the time the permissibility of those operations is determined.

10.19.6 The Scale and Type of Impact

The proposed development requires activities such as ground preparation and improvement, landform modification, contamination remediation, landscaping and the construction of new buildings, services and vehicle/pedestrian access and circulations routes. All of these activities would have an impact on archaeological remains (should they be present). The impact would be permanent, irreversible and direct.

10.19.7 Indirect Impacts

The effect of development on the significance of the setting of heritage assets is a material consideration in determining a planning application and NPPF advises Local Planning Authorities that they should require an applicant to provide a description of the significance of the heritage assets affected and the contribution of their setting to that significance. The methodological approach to assessing setting and potential impacts to the significance of cultural heritage and archaeological assets and the outcome of the setting assessment is provided in **Volume 3 Appendix ARC 20**. The assessment of impact to setting has been advanced in collaboration with assessment of the landscape and visual impact, which is reported upon in Section 8.

10.20 Residual Effects

The mitigation measures and the advancement of understanding compensates for the loss of any cultural heritage and archaeological assets. The investigation and recording of any cultural heritage and archaeological assets would lead to an overall residual adverse effect that is Slight Negative/Neutral for all directly impacted assets. The residual effect, therefore, remains as reported in the Environmental Assessment (10.19) with the exception that the proposed mitigation for the area of undated ditches should also be taken into account and the corresponding and specific reduction in the slight/moderate negative effect to a residual effect of slight negative/neutral should be recognised.

10.20.1 Residual Impacts

The residual effects are the effects that remain on the cultural heritage and archaeological assets, once mitigation has been completed. The effects upon cultural heritage and archaeological assets for which a significant effect has been identified, will be reduced through the completion of the mitigation measures and the residual effect will be less significant, or will have been suitably compensated for, than would be the case in the absence of mitigation.

10.20.2 The recommended mitigation responses for direct impacts to cultural heritage and archaeological assets would not diminish the direct, physical impact upon the assets. However, they do ameliorate the impact by the creation of information and knowledge of public benefit and the implementation of cultural heritage and archaeological investigations and recording operations is considered to be appropriate mitigation which would assuage the effect on the cultural heritage and archaeological assets.

10.20.3 The mitigation measures and the advancement of understanding compensates for the loss of any cultural heritage and archaeological assets. With respect to the Assessment Site the investigation and recording of any cultural heritage and archaeological assets would lead to an overall residual adverse effect that is Slight Adverse /Neutral for all directly impacted assets.

10.21 Cumulative Effects

10.21.1 The cumulative impact assessment concludes that providing adequate consideration has been given by the Council to cultural heritage and archaeology within the due planning process applied to the proposed development and that, where consented, adequate mitigation measures are specified and carried out, then cumulative impacts on archaeological and cultural heritage assets arising from the proposed development are not considered to be significant.

10.22 PINS Request Arising from Schedule 4 of Regulation 22 of the 2011 EIA Regulations

10.21.1 Following examination of the ES, the Secretary of State notified the appellant that to comply with Schedule 4 of Regulation 22 of the 2011 EIA Regulations (Information for inclusion in environmental statements) further information was required. With respect to cultural heritage and archaeology the following was requested: justification for not undertaking detailed archaeological evaluations in the north-west and south-east sections of the site. This Chapter will also therefore address the Secretary of State's request.

10.21.2 In responding to the Secretary of State's request it should be noted that the overall objective of the cultural heritage and archaeology assessment was to provide a realistic assessment of likely significant effects on the environment with reference to cultural heritage and archaeological assets and to allow for an informed decision-making process.

10.21.3 In line with the overall objective, the aim of the assessment was to:

- Identify all known and potential designated and non-designated cultural heritage and archaeological assets within and in the vicinity of the proposed development that may be affected by the proposed development and evaluate their significance;
- Outline any likely environmental impacts of the proposed development on cultural heritage and archaeological assets, likely to be affected, assessing the magnitude of any identified impacts;
- Assess the effects of the proposed development upon those cultural heritage and archaeological assets, categorising the scale of effect against significance;
- Identify, where relevant, any mitigation measures and assess the likely residual impact after such mitigation on the identified cultural heritage and archaeological assets

10.21.4 With respect to the geographic extent of the study area utilised for the Cultural Heritage and Archaeology Chapter of the ES designated and non-designated cultural heritage and archaeological assets, both within the proposed development (the Assessment Site) and within approximately 500m of the Assessment Site boundary of the proposed development (the Assessment Area) were identified and considered. An assessment area of this extent represents a commonly adopted and satisfactory geographic range for the purposes of assessment and was acceptable to the Local Planning Authority. The cultural heritage and archaeological assets in the Assessment Area have been identified and considered in order that the known and potential cultural heritage and archaeological assets of the Assessment Site can be placed in the broader context of the known knowledge-base of the area. However, certain assets which, although located beyond the Assessment Area, were also taken into account and were considered during this assessment process using professional judgment and discrimination. It was considered that the assessment process, whilst it needs to be conducted with reference to a framework defined by geographical limits, should not be rigidly constrained by such a framework and particular archaeological and cultural heritage assets should not be omitted merely on the basis of distance from the application site.

10.21.5 As part of a duly diligent approach to the assessment process reports of previous, relevant investigative archaeological and cultural heritage undertakings were reviewed. This review included examination of the CPM document *Land at Peel Hal, Warrington, Cheshire – An Archaeological Assessment*, prepared in 1999 and used for a number of planning applications that were either withdrawn or refused 99/31332, 99/40295, 99/40296, 99/40299 and 99/402300. This document was useful, and whilst the land it considered was broadly coincident with the application area for 2016/28492, the fact of its age and the points of departure between the respective applications meant that it could not be wholly relied upon for application 2016/28492. Accordingly, after discussions with the Historic Environment Records Officer and the Development Management Archaeologist and Team Leader of Cheshire Archaeology Planning Advisory Service (CAPAS) concerning the assessment parameters for the Cultural Heritage and Archaeology Chapter of the Environmental Statement (ES), the Cheshire Historic Environment Record (CHER) was consulted to obtain the latest information on known sites and features of archaeological interest within the Assessment Site and the Assessment Area. The CHER data was supplemented and cross-referenced by means of examination of historic mapping of the assessment area, aerial photographs of the Assessment Site and published works such as archaeological/historic journals issued by learned societies and reference books on the archaeology and history of the area. Searches were also made of data in the Cheshire Record Office (CRO), the Lancashire Record Office (LRO), Warrington Museum & Art Gallery (WM&AG), Warrington Library (WL) and a number of online sources such as the Heritage Gateway database, the National Heritage List, and the National Monuments Record's *PastScape* historic environment database. A comprehensive map-regression exercise was undertaken.

10.21.6 As recognised by the contents of the ES and by the Development Management Archaeologist and Team Leader of CAPAS in his consultation response to 2016/28492 dated 17 August 2016, the areas of archaeological interest on the site are focussed on the land immediately to the south of Peel Hall and an area of undated ditches extending over an area of c. 50m by 50m in the north east corner of the application area at SJ 6199 9187 which may represent an area of earlier settlement. This archaeological interest was demonstrated by an archaeological evaluation by means of trial trenches carried out by the Lancaster University Archaeological Unit in 2001. The information collected during preparation of the ES suggests that it would be unreasonable to undertake any further detailed archaeological evaluations at the site as the balance of evidence suggests there are unlikely to be archaeological remains in the north-west and south east sections of the site, and it would be unreasonable for evaluative archaeological investigation to be undertaken in these areas of the site.

10.21.7 For the purposes of clarity it is noted that the Development Management Archaeologist and Team Leader of CAPAS made no adverse comment on the content of Chapter 10 of the ES which accompanied application 2016/28492. The inference to be drawn from this absence of adverse comment is that Chapter 10 of the ES contained sufficient information for an informed opinion to be provided to the Council on the archaeological implications of the proposed development. It is also noted that the Development Management Archaeologist and Team Leader raised no objection to application 2016/28492 on archaeological grounds and that the spirit and intent of his recommended condition, should the Council have been mindful to grant permission, to mitigate any harm to archaeological remains that may have occurred during construction, was consistent with the proposed archaeological mitigation detailed in the ES.

11.0 NOISE & VIBRATION

11.1 Introduction

- 11.1.1 An assessment of the likely significant potential effects of the Project on the local noise environment has been under-taken by Miller Goodall Ltd. This addendum chapter of the ES describes the legislative framework applicable to noise and determines the predicted effects of noise due to the operational phase of the Project and how they relate to appropriate significance criteria.
- 11.1.2 The effects of existing noise sources on the proposed residential development introduced to the site as part of the Project will be assessed with reference to measured noise levels from the M62, which dominates the existing noise climate in the area and guidance criteria from ProPG: Planning and Noise, New Residential Development, May 2017[Ref: 11.1] and BS8233: 2014 Guidance on Sound Insulation and Noise Reduction for Buildings [Ref 11.2]. The effects of noise generated as part of the operational Project, namely traffic noise, from vehicles introduced to the existing local road network, will be assessed with reference to Design Manual for Roads and Bridges LA 111 Noise and Vibration Rev 0 [Ref 11.3].
- 11.1.3 Where appropriate, mitigation measures proposed to reduce or remove any likely significant effects are described. Finally, the likely residual impact of the Project on the local noise environment is assessed.

11.2 Legislative Framework

- 11.2.1 The following section describes the relevant legislation, guidance and policy publications to which regard has been had in undertaking the assessments.

Noise Policy Statement for England

- 11.2.2 The Noise Policy Statement for England (NPSE) DEFRA [Ref 11.4], published in March 2010, sets out the long-term vision of Government noise policy. The Noise Policy aims, as presented in this document, are:

“Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *avoid significant adverse effects on health and quality of life;*
- *mitigate and minimise adverse effects on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life.”*

11.2.3 The NPSE makes reference to the concepts of NOEL (No Observed Effect Level) and LOAEL (Lowest Observed Adverse Effect Level) as used in toxicology but applied to noise impacts. It also introduces the concept of SOAEL (Significant Observed Adverse Effect Level) which is described as the level above which significant adverse effects on health and the quality of life occur.

11.2.4 The first aim of the NPSE is to avoid significant adverse effects, taking into account the guiding principles of sustainable development (as referenced in Section 1.8 of the Statement). The second aim seeks to provide guidance on the situation that exists when the potential noise impact falls between the LOAEL and the SOAEL, in which case:

“...all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development”.

11.2.5 Importantly, the NPSE goes on to state:

“This does not mean that such adverse effects cannot occur”.

11.2.6 The Statement does not provide a noise-based measure to define SOAEL, acknowledging that the SOAEL is likely to vary depending on the noise source, the receptor and the time in question. NPSE advises that:

“Not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available”

11.2.7 It is therefore likely that other guidance will need to be referenced when applying objective standards for the assessment of noise, particularly in reference to the SOAEL, whilst also taking into account the specific circumstances of a proposed development.

National Planning Policy Framework

11.2.8 The National Planning Policy Framework (NPPF) [Ref 11.5] initially published in March 2012, was updated in February 2019. One of the documents that the NPPF replaces is Planning Policy Guidance Note 24 (PPG 24) “Planning and Noise”.

11.2.9 The revised NPPF advises that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives). One of these is an environmental objective which is described in par. 8 (c):

“to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.”

11.2.10 At par. 170 we are advised that:

“Planning policies and decisions should contribute to and enhance the natural and local environment by:

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.

11.2.11 Par. 180 goes on to state:

“Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

Planning Practice Guidance – Noise

11.2.12 Planning Practice Guidance - Noise (PPG) [Ref 11.6] provides additional guidance and elaboration on the NPPF. It advises that when plan-making and decision-taking, the Local Planning Authority should consider the acoustic environment in relation to:

- Whether or not a significant adverse effect is occurring or likely to occur;
- Whether or not an adverse effect is occurring or likely to occur; and
- Whether or not a good standard of amenity can be achieved.

11.2.13 In line with the Explanatory Note of the NPSE, the PPG goes on to reference the LOAEL and SOAEL in relation to noise impact. It also provides examples of outcomes that could be expected for a given perception level of noise, plus actions that may be required to bring about a desired outcome. However,

in line with the NPSE, no objective noise levels are provided for LOAEL or SOAEL although the PPG acknowledges that:

“...the subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation”.

11.2.14 Examples of these factors include:

- The source and absolute noise level of the source along with the time of day that it occurs;
- Where the noise is non-continuous, the number of noise events and pattern of occurrence;
- The frequency content and acoustic characteristics of the noise;
- The effect of noise on wildlife;
- The acoustic environment of external amenity areas provided as an intrinsic part of the overall design; and
- The impact of noise from certain commercial developments such as night clubs and pubs where activities are often at their peak during the evening and night.

11.2.15 The PPG also provides general advice on the typical options available for mitigating noise. It goes on to suggest that Local Plans may include noise standards applicable to proposed developments within the Local Authority's administrative boundary, although it states that

“Care should be taken, however, to avoid these being implemented as fixed thresholds as specific circumstances may justify some variation being allowed”.

11.2.16 The PPG was amended in December 2014 to clarify guidance on the potential effect of noise from existing businesses on proposed new residential accommodation. Even if existing noise levels are intermittent (for example, from a live music venue), noise will need to be carefully considered and appropriate mitigation measures employed to control noise at the proposed accommodation.

Professional Practice Guidance on Planning & Noise – New Residential Development

11.2.17 ProPG [Ref 11.1] is guidance with the aim of delivering sustainable development and promoting good health and well-being through the effective management of noise which may impact on new residential developments. The guidance aims to complement the national planning policy and encourages the use of good acoustic design at the earliest phase of the planning process. It builds upon the recommendations of various other guidance documents including NPPF, NPSE and PPG-Noise, BS 8233 and WHO.

11.2.18 The guidance is applicable to new residential developments which would be exposed predominantly to noise from existing transport sources. The ProPG advocates a risk-based approach to noise using a two-stage process:

- Stage 1 – an initial noise risk assessment of the proposed development site; and
- Stage 2 – a systematic consideration of four key elements: –
 - Element 1 – demonstrating a ‘Good Acoustic Design Process’;
 - Element 2 – observing internal ‘Noise Level Guidelines’;
 - Element 3 – undertaking an ‘External Amenity Area Noise Assessment’; and
 - Element 4 – consideration of ‘Other Relevant Issues’.

11.2.19 The ProPG approach is underpinned by the preparation and delivery of an ‘Acoustic Design Statement’ (ADS), whereby the higher the risk for noise at the site, the more detailed the ADS. The ADS should address the following issues:

- Present the initial site noise risk assessment, including the pre-development acoustic conditions prior to development;
- Describe the external noise levels that occur across the site both before and after any necessary mitigation measures have been incorporated. The external noise assessment with mitigation measures in place should use an informed judgement of typical worst-case conditions;
- Demonstrate how good acoustic design is integrated into the overall design and how the proposed acoustic design responds to specific circumstances of the site;
- Confirm how the internal noise level guidelines will be achieved, including full details of the design measures and building envelope specifications;
- A detailed assessment of the potential impact on occupants should be undertaken where individual noise events are expected to exceed 45 dB $L_{AF,max}$ more than 10 times a night inside bedrooms;
- Priority should be given to enable the use of openable windows where practical across the development. Where this is not practical to achieve the internal noise level guidelines with windows open, then full details of the proposed ventilation and thermal comfort arrangements must be provided;
- Present the findings of the external amenity area noise assessment;
- Present the findings of the assessment of other relevant issues;
- Confirm for a low risk site how adverse impacts of noise will be mitigated and minimised;
- Confirm for a medium or high noise risk site how adverse impacts of noise will be mitigated and minimised and clearly demonstrate that a significant adverse noise impact has been avoided.

11.2.20 ProPG target noise levels are based on existing guidance from BS 8233 and WHO (see below).
Table 11.1 below outlines the guidance noise levels for different room types during day and night times.

Table 11.1: ProPG guideline indoor ambient noise levels for dwellings

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living Room	35 dB $L_{Aeq,16hr}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16hr}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$ 45 dB $L_{Amax,F}$

11.2.21 The footnotes to this table suggest that internal noise level limits can be relaxed by up to 5 dB where development is considered necessary or desirable, and still represent “reasonable” internal conditions. They also suggest that in such cases, external levels which exceed WHO guidance target levels (see WHO section below) may still be acceptable provided that reasonable internal noise levels are achieved. Although, where the acoustic environment of external amenity areas is intrinsic to the overall design, “noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$ ”. The wording of ProPG (and BS 8233:2014) is clear that exceedance of guideline noise levels in external areas should not prohibit the development of desirable developments in any event.

BS8233:2014+A1:2019 Guidance on Sound Insulation and Noise Reduction for Buildings

11.2.22 This standard [Ref 11.2] provides recommended guideline values for internal noise levels within dwellings which are similar in scope to guideline values contained within the World Health Organisation (WHO) document, Guidelines for Community Noise (1999). These guideline noise levels are shown in Table 11.2, below

Table 11.2: BS 8233: 2014 guideline indoor ambient noise levels for dwellings

Location	Activity	07:00 to 23:00	23:00 to 07:00
Living Room	Resting	35 dB $L_{Aeq,16hr}$	-
Dining room/area	Dining	40 dB $L_{Aeq,16hr}$	-
Bedroom	Sleeping (daytime resting)	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$

11.2.23 BS 8233:2014 advises that:

“regular individual noise events...can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$ depending on the character and number of events per night. Sporadic noise events could require separate values”.

11.2.24 BS 8233:2014 adopts guideline external noise values provided in WHO for external amenity areas such as gardens and patios. The standard states that it is “desirable” that the external noise does not exceed 50 dB $L_{Aeq,T}$ with an upper guideline value of 55 dB $L_{Aeq,T}$ whilst recognising that development in higher noise areas such as urban areas or those close to the transport network may require a compromise between elevated noise levels and other factors that determine if development in such areas is warranted. In such circumstances, the development should be designed to achieve the lowest practicable noise levels in external amenity areas

Design Manual for Roads and Bridges

11.2.25 Volume 11, Section 3 of the DMRB defines environmental assessment techniques for schemes that will make changes to the road network. Part 7 of Section 3 relates to the effect of noise and vibration. Environmental assessment techniques for noise and vibration are set out in Sustainability & Environment Appraisal, LA111 Noise and Vibration, Rev 0, November 2019 [Ref 11.3], which replaces the previous document HD 213/11 which is withdrawn.

11.2.26 The document sets out the requirement for noise and vibration assessments from road projects, applying a proportionate and consistent approach using best practice and ensuring compliance with relevant legislation. It provides a framework for defining the magnitude of change in noise levels due to changes in road traffic flows and for determining the significance of effect of those changes.

11.2.27 LA111 requires comparison of the following traffic scenarios:

- Short term: Do Minimum Opening Year (DMOY) compared against the Do Something Opening Year (DSOY);
- Long-term: DMOY compared against the Do Something Future Year (DSFY); and
- Non-project noise change: Do-Minimum Future Year (DMFY) compared against the DMOY.

11.2.28 Tables within LA111 identify operational LOAEL and SOAEL levels, magnitude of change for short-term and long-term scenarios and initial assessment of significance due to the short-term magnitude of change. These are reproduced in Table 11.3, Table 11.4 and Table 11.5 below.

Table 11.3: Operational noise LOAELs and SOAELs for all receptors

Time Period	LOAEL	SOAEL
Day (0600 – 0000)	55 dB $L_{A10,18h}$ facade	68 dB $L_{A10,18h}$ facade
Night (0000 – 0600)	40 dB $L_{A10,18h}$ free field	55 dB $L_{A10,18h}$ free field

Table 11.4: Magnitude of Change

Short Term Magnitude	Short term noise change (dB $L_{A10,18h}$ or L_{night})
Major	Greater than or equal to 5.0
Moderate	3.0 – 4.9
Minor	1.0 – 2.9
Negligible	Less than 1.0
Long Term Magnitude	Long term noise change (dB $L_{A10,18h}$ or L_{night})
Major	Greater than or equal to 10.0
Moderate	5.0 – 9.9
Minor	3.0 – 4.9
Negligible	Less than 3.0

Table 11.5: Initial assessment of operational noise significance

Significance	Short Term Magnitude of Change
Significant	Major
Significant	Moderate
Not Significant	Minor
Not Significant	Negligible

11.2.29 Where the magnitude of change in the short term is negligible at noise sensitive buildings, it shall be concluded that the noise change will not cause changes to behaviour or response to noise and as such, will not give rise to a likely significant effect.

11.2.30 For noise sensitive receptors where the magnitude of change in the short term is minor, moderate or major at noise sensitive buildings, further assessment of local circumstances shall be used, together with the output of Table 11.5 to determine final significance. The following local circumstances can be used to determine if the initial assessment of significance based on the absolute change in noise level can be changed in the final assessment on a receptor by receptor basis:

- Is the noise levels change within 1 dB of the Minor / Moderate boundary;
- Is the magnitude of impact different in the short and long term;
- How does the absolute noise level compare to the LOAEL and SOAEL;
- Is the sensitive façade directly exposed to the noise source;
- Is the acoustic character of the area changed as a result of the project; and
- Is the project likely to change the landscape or setting of a receptor.

11.3 Assessment Methodology

11.3.1 This section discusses the methodology used in the assessment of impact due to noise on existing and proposed sensitive receptors.

The Study Area

11.3.2 The effects of noise will be broken down into two study areas, which will have some element of overlap.

11.3.3 Noise emissions from the existing road network, most notably the M62 which runs along the entire northern boundary of the site, will be assessed to determine potential significant effects of noise on future residents of the site. The extent of this study area will be entirely within the redline of the site as defined in **Appendix APP17**.

11.3.4 Changes in noise levels at existing receptors will be assessed in the residential area to the south of the site. Future road traffic flows have been provided for the noise assessment, a full list of roads and the predicted flows used in the assessment are presented in **Appendix N1**. The area of study is defined as the main routes bounded by and including:

- North – M62
- South – A50 (Long Lane and Orford Green) & Hilden Road
- East – Blackbrook Avenue & Mill Lane / Delph Lane
- West – A49 Winwick Road

11.3.5 Whilst not every road link within the area described is included in the assessment, where there is a high likelihood that road traffic associated with the development will use a link for site access, that link has been included in the assessment. Existing residential receptors are within this area and are presented in Figure 11.2.

Baseline Survey

11.3.6 A baseline noise survey has been undertaken to inform the site suitability assessment. Noise levels over the site are dominated day and night by road traffic noise from the M62 which runs for the entire length of the northern site boundary. Attended noise measurements were taken at three locations along the northern boundary of the site at locations presented in **Figure N6**.

11.3.7 Noise measurements were undertaken at a location consistent with the proposed development in accordance with BS 7445-1: 2003 by Matt Wilson and Reid Malster of Miller Goodall Ltd. The calibration of the sound level meter was checked before and after measurements with negligible deviation (<0.1 dB). Details of the equipment used are shown in Table 11.6, below:

Table 11.6: Noise monitoring equipment

Equipment Description	Type Number	Manufacturer	Serial No.	Date Calibrated	Calibration Certification Number
Class 1 ^{[1],[2]} Integrating Real Time 1/3 Octave Sound Analyser	NOR 140	Norsonic	1406815	12/12/2018	30355
Microphone	NOR 1225	Norsonic	264687	12/12/2018	30354
Class 1 Calibrator ^[3]	NOR 1251	Norsonic	34123	13/07/2018	03885/2
Outdoor microphone housing	NOR 1217	Norsonic	12175738	N/a	N/a
Class 1 ^{[4],[5]} Integrating Real Time 1/3 Octave	NOR 140	Norsonic	1406017	23/05/2017	03238/2

^[1] IEC 61672-1 (2002) Electroacoustics – Sound level meters Part 1: Specifications

^[2] IEC 61260 (1995) Electroacoustics – Octave-band and fractional-octave-band filters

^[3] IEC 60942 (2003) Electroacoustics – Sound calibrators

^[4] IEC 61672-1 (2002) Electroacoustics – Sound level meters Part 1: Specifications

^[5] IEC 61260 (1995) Electroacoustics – Octave-band and fractional-octave-band filters

Equipment Description	Type Number	Manufacturer	Serial No.	Date Calibrated	Calibration Certification Number
Sound Analyser					
Microphone	NOR 1225	Norsonic	151206	23/05/2017	03238/2
Class 1 Calibrator ^[6]	Type 4231	Brüel & Kjær	2478249	13/07/2018	03885/1
Outdoor microphone housing	NOR 1217	Norsonic	12175146	N/a	N/a

11.3.8 Specific, background and ambient noise monitoring was undertaken at the times specified in Table 11.7, below. Weather conditions were determined both at the start and on completion of the survey. It is considered that meteorological conditions were appropriate for environmental noise measurements, further details of onsite weather conditions are presented in **Appendix N2**.

Table 11.7: Monitoring Information

Position	Type	Start	End	SLM
MP01	Attended	22/05/19 11:12	22/05/19 14:12	1406017
MP02	Attended	22/05/19 11:25	22/05/19 14:14*	1406815
MP04**	Attended and Unattended	23/05/19 12:00	24/05/19 08:00	1406815

* Monitoring just short of target 3 hours to avoid confrontation

** Attended 12:00 – 15:00, Unattended 16:00 – 08:00

11.3.9 Monitoring at MP03 was to be undertaken at Mill Lane playing fields, immediately north of The Millhouse. Attended monitoring at this location was repeatedly disturbed by pedestrians and eventually terminated due to grass cutting activities on the playing field. The measured data was not suitable for use in this assessment and modelled traffic data will be utilised.

11.3.10 Long term monitoring at MP01 and MP02 was not undertaken as the surveyors were advised that there was an enhanced risk of vandalism to monitoring equipment left on the site unattended. The position at MP04 was deemed suitable for unattended monitoring as equipment could be placed out of obvious sight.

^[6] IEC 60942 (2003) Electroacoustics – Sound calibrators

Consultation

11.3.11 Consultation has been completed with Mr Steve Smith within the Environmental Health Department of WBC. Table 11.8 provides a summary of the consultation activities undertaken in support of preparation of this Chapter.

Table 11.8: Noise Assessment Consultation

Organisation	Individuals	Date	Summary of consultation
MG	JLM	22/1/2019	Outline of proposed methodology for undertaking the site suitability assessment along with details of noise monitoring, noise modelling and assessment criteria. At this stage traffic data was not available and MG aimed to clarify whether a full DMRB assessment would be required.
WBC	SS	28/1/2019	A response was received from Steve Smith, with a copy of the previous planning consultation response dated 1/2/2017 for planning application ref: 2016/28492. The response confirmed the proposed methodology and confirmed in relation to DMRB assessment, it was confirmed that the level of change in noise levels at the site would need to be assessed in terms of significance of impact.
MG	MW	04/02/2020	Further consultation methodology provided to Warrington confirming the addresses to be used for the assessment.
WBC	SS	04/02/2020	Email from Steve Smith confirming he will comment on the proposals the following week.

Significance Criteria

11.3.12 This section of the chapter describes the methodology which has been used to assess the significance of effects on noise. The significance of likely effects arising from the operation of the Proposed

Development on noise has been determined by identifying the magnitude of the impact and the sensitivity of the receptor.

Method of Assessing Significance – Residential Development

11.3.13 BS 8233:2014 provides recommended guideline values for internal noise levels within dwellings which are similar in scope to guideline values contained within the World Health Organisation (WHO) document, Guidelines for Community Noise (1999) [Ref 11.7]. The magnitude of impact in comparison to these guideline values is provided in Table 11.9, below.

Table 11.9: BS 8233: noise level criteria and magnitude for internal and external noise

Magnitude of Impact	Activity	07:00 to 23:00	23:00 to 07:00
Major	Road Traffic	Noise levels > 40 dB $L_{Aeq,16hr}$ living rooms and bedrooms Noise levels > 45 dB $L_{Aeq,16hr}$ in dining rooms Noise levels > 55 dB $L_{Aeq,16hr}$ for external amenity space	Noise levels > 35 dB $L_{Aeq,8hr}$ in bedrooms Noise levels > 50 dB L_{AFmax} in bedrooms
Moderate	Road Traffic	Noise levels > 35 ≤ 40 dB $L_{Aeq,16hr}$ living rooms and bedrooms Noise levels > 40 ≤ 45 dB $L_{Aeq,16hr}$ in dining rooms Noise levels > 50 ≤ 55 dB $L_{Aeq,16hr}$ for external amenity space	Noise levels > 30 ≤ 35 dB $L_{Aeq,8hr}$ in bedrooms Noise levels > 45 ≤ 50 dB L_{AFmax} in bedrooms
Minor	Road Traffic	Noise levels ≤ 35 dB $L_{Aeq,16hr}$ living rooms and bedrooms Noise levels ≤ 40 dB $L_{Aeq,16hr}$ in dining rooms	Noise levels ≤ 30 dB $L_{Aeq,8hr}$ in bedrooms
Negligible	Road Traffic	Noise levels ≤ 50 dB $L_{Aeq,16hr}$ for external amenity space	Noise levels ≤ 45 dB L_{AFmax} in bedrooms

Method of Assessing Significance – Operational Traffic

11.3.14 CadnaA noise modelling has been used to predict the likely effect of new road traffic associated with the Proposed Development on new and existing residential dwellings using the methodology within Calculation of Road Traffic Noise, CRTN: 1988 [Ref 11.8].

11.3.15 LA111 [Ref 11.3] has been used as the basis for definition of the assessment of road traffic noise in relation to the Proposed Development. The predictions of road traffic have been based on the following scenarios:

- Year of opening 2022 Do Minimum (DMOY)
- Year of opening 2022 Do Something (DSOY)
- Future Year 2037 Do Minimum (DMFY)
- Future Year 2037 Do Something (DSFY)

11.3.16 The future year is defined as the opening year + 15 years. The magnitude of impact is determined with reference to the Table 3.54a and 3.54b in LA111. The level of change can be beneficial as well as adverse. In this assessment, the change in $L_{A10,18h}$ is considered.

Table 11.10: Magnitude of Impact

Short Term Magnitude	Short term noise change (dB LA10,18h)
Major	Greater than or equal to 5.0
Moderate	3.0 – 4.9
Minor	1.0 – 2.9
Negligible	Less than 1.0
Long Term Magnitude	Long term noise change (dB LA10,18h)
Major	Greater than or equal to 10.0
Moderate	5.0 – 9.9
Minor	3.0 – 4.9
Negligible	Less than 3.0

Method of Assessing Significance

- 11.3.17 The sensitivity of receptor is dependent on the use of the building or land. For the purpose of this assessment, all residential buildings will be assigned a high level of sensitivity.
- 11.3.18 Where a magnitude of impact is moderate or major, the effect of noise at the identified receptor will be considered significant.
- 11.3.19 Changes in traffic noise levels at identified receptors around the proposed development site can be beneficial if the noise level is predicted to reduce as a result of the development. Where levels are expected to rise as a result of the development, the effect will be considered adverse.
- 11.3.20 The initial assessment of significance for adverse changes in road traffic noise can be revised with reference to each receptor's local circumstances to determine a final significance.

Mitigation Measures Methodology

- 11.3.21 Where there is a potential significant effect due to changes in traffic noise levels, the methodology for application of mitigation will follow the standard hierarchy for noise:
- Eliminate – Can the noise source be removed;
 - Substitute – Can the noise be altered or changed;
 - Engineering Control – Can a barrier or other mitigation measures be introduced to control the noise on the transmission path;
 - Administration Control – Can mitigation be applied to the receptor.
- 11.3.22 Considering the nature of the noise source, elimination or substitution of the road noise source is unlikely and controlling the noise at the façade of the receptor will only be appropriate where absolute noise levels exceed the sound insulation regulations. The most common method of noise mitigation will be through engineering controls in terms of speed limits or appropriately placed noise barriers.

Residual Effects Methodology

- 11.3.23 Residual effects of the Proposed Development have been identified and assessed using professional judgment taking into account factors such as;
- the existing and future noise levels in the absence of the development;
 - the difference in noise level due to the proposed mitigation measures;

- the influence and validity of any assumptions adopted when undertaking the prediction of impacts.

11.4 Limitations and Assumptions

11.4.1 The assessment is based on the design and operational details available at the time of preparing the ES.

11.4.2 There are a number of limitations and uncertainties associated with modelling of noise, and where applicable, realistic worst-case scenarios have been assumed (based on professional judgement):

- Noise monitoring at the northern extent of the site in order to determine existing $L_{Aeq,T}$ noise levels for day and night have been measured as a single time period rather than multiple visits to check any seasonal variation.
- Traffic flows for year of opening and future year scenarios are based on predicted traffic flows and growth rates provided by the wider project team. The highways and transportation chapter 9 provides further information regarding uncertainty in traffic figures.
- To ensure the assessment accounts for a worst case, short term traffic flows used in the assessment are those predicted for the opening of the full development at the year of opening.
- Speed limits on each road have been used to generate speeds for vehicles on each road in noise modelling.

11.5 Baseline Conditions

11.5.1 At present the development site is open former agricultural land with a small number of existing farm buildings. The area is divided areas and lines of trees, small water courses and Radley Lane, which provides access to the existing farm and is also a Public Right of Way.

11.5.2 A site walkover in May 2019 determined that the existing noise sources on the site are dominated by existing road traffic noise, most notably from the M62. Other noise sources identified on the site include fixed wing aircraft associated with Manchester and Liverpool Airports, passenger helicopters, birds and road traffic noise from roads such as Mill Lane to the east and the A49 to the west.

11.5.3 Off the site, the existing residential receptors along the access routes are dominated by road traffic noise from the existing road network. When traffic levels die down, the baseline background noise level includes a contribution from the distant road network including the M62.

Baseline Noise Measurements 2019

- 11.5.4 A noise survey was undertaken in May 2019 at three locations along the northern boundary of the site, close to the M62. Monitoring locations are shown on **Figure N6**. Full noise monitoring data is detailed in **Appendix N3**, and a summary of measured data from each monitoring location is displayed in Table 11.11.

Table 11.11: Summary of Monitoring Data

Position	Date	Start hh:mm:ss	Duration hh:mm:ss	$L_{Aeq,T}$ dB	L_{AFMAX} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
MP01	22/05/2019	11:12:45	03:00:00	79	88	82	75
MP02	22/05/2019	11:25:02	02:49:32	72	83	74	69
MP04 Day	23/05/2019	12:00:08	11:00:00	76	97	78	72
MP04Night	23/05/2019	23:00:00	08:00:00	72	85	76	60

- 11.5.5 Night time L_{AFmax} events are given in Table 11.11 as the worst-case single highest maximum noise event. The 10th highest event measured over the 8 hour night time period, with 5 minute resolution, is 83 dB, which is less than 15 dB above the $L_{Aeq,8h}$ and therefore an indication that the average night time noise level and not the maximum noise events will be the influencing factor in acoustic mitigation design.

Future Baseline Traffic Data

- 11.5.6 Traffic flow figures have been provided by Highgate Transportation Ltd. Chapter 9 of this ES gives further detail on the methodology used for predicting flow rates for the traffic scenarios detailed in Section 11.3.15. Table 11.12 below gives a summary of the Average Annual Weekday Traffic flow, AAWT_18h, with full information including HGV% and assumed speed limits for the roads for each of the four traffic scenarios in the assessment given in the accompanying technical appendix.
- 11.5.7 In order to assess a worst-case scenario, the DSOY 2022 scenario assumes that the fully developed site and all associated traffic will be present at the year of opening.

Table 11.12: Summary Traffic Flow Data

Road Link	AAWT18 DMOY	AAWT18 DSOY	AAWT18 DMFY	AAWT18 DSFY
A49 Northbound (Junction NINE Retail Park - Hawleys Lane)	22674	23149	25793	26581
A49 Northbound (M62/Birch Avenue - Poplars Avenue)	22885	23250	25904	26602
A49 Northbound (north of M62)	24531	24868	27899	28340
A49 Northbound (parallel to Brendon Avenue - Sandy Lane West)	22885	23250	25904	26602
A49 Northbound (Sandy Lane West – Junction NINE Retail Park)	23212	23685	26841	27670
A49 Southbound (Junction NINE Retail Park - Hawleys Lane)	24386	24459	26044	26517
A49 Southbound (M62/Birch Avenue - Poplars Avenue)	24901	25167	28270	28846
A49 Southbound (north of M62)	22941	23245	26119	26468
A49 Southbound (parallel to Brendon Avenue - Sandy Lane West)	24901	25167	28270	29051
A49 Southbound (Sandy Lane West – Junction NINE Retail Park)	23970	24040	26041	26519
A50 Long Lane	13207	13342	14249	14462
A50 Orford Green	11802	12843	13452	14746
A50 Orford Green - Birchwood Way	18416	20274	21092	22298
A50 School Road	12218	12372	13741	13783
Birch Avenue (Site entrance)	208	391	241	431
Birchwood Way (A50 - Blackbrook Ave)	4622	4376	5160	4287
Birchwood Way (Blackbrook Ave - Woolston Grange Ave)	18572	18834	21063	21649
Blackbrook Avenue (Ballater Dr - Capesthorne Rd)	7628	12686	9263	14790
Blackbrook Avenue (Capesthorne Rd - Insall Rd)	7487	10613	9030	13945
Blackbrook Avenue (Insall Rd - Birchwood Way)	7441	8963	9412	11204
Capesthorne Road (Greenwood Crescent to Blackbrook Avenue)	7918	11466	10132	14478
Capesthorne Road (Poplars Avenue - parallel to Humber Road)	2669	3253	2724	3395
Capesthorne Road (Poplars Avenue - School Road)	5409	8632	7618	11280
Cleveland Road	3920	5064	6400	7730
Cotswold Road	397	928	448	989
Delph Lane (Mill Lane - Myddleton Lane)	7767	8631	9264	9920
Fisher Avenue	1875	2689	3472	4264
Grasmere Avenue	1375	1409	1551	1584

Road Link	AAWT18 DMOY	AAWT18 DSOY	AAWT18 DMFY	AAWT18 DSFY
Grasmere Avenue (Site entrance)	0	190	0	197
Greenwood Crescent (Darley Ave to Grasmere Ave)	1732	2059	1874	2430
Greenwood Crescent (Grasmere Ave to Meteor Cres)	3205	3377	3555	3863
Hilden Road	13181	15403	14735	17095
Howson Rd	463	722	522	830
M62 Eastbound J8 - J9	58799	59039	67917	68163
M62 Eastbound J9 - J10 (east of Mill Lane)	33076	33194	37946	38069
M62 Eastbound J9 - J10 (west of Mill Lane)	54585	54792	62801	63016
M62 Junction 9 Eastbound Entry Slip	8214	8420	9467	9682
M62 Junction 9 Westbound Off Slip	7675	7772	8815	8916
M62 Westbound J8 - J9	65929	66150	76245	76476
M62 Westbound J9 - J10 (east of Mill Lane)	63848	63945	73481	73582
M62 Westbound J9 - J10 (west of Mill Lane)	63848	63945	73481	73582
Mill Lane (Ballater Dr - Site entrance, north of Millhouse Pub)	8381	14467	10011	16389
Mill Lane (Delph Lane - underneath the M62)	7767	8631	9264	9920
Mill Lane (Mill Lane turn off - Site entrance)	7735	9367	9228	10731
Mill Lane (Site entrance)	0	562	0	584
Mill Lane/Blackbrook Avenue (Site entrance)	0	5865	0	5637
Northway NB	1968	1870	2066	1941
Northway SB	1304	1733	2245	2557
Poplars Avenue - East of (Central) Site entrance	4699	7662	7317	10586
Poplars Avenue - West of (Central) Site entrance	4038	5981	6538	8725
Poplars Avenue (Central) (Site entrance)	0	1968	0	2044
Poplars Avenue (Greenwood Cres - Capesthorne Road)	10211	13841	13875	17312
Poplars Avenue (south of Capesthorne Road)	8115	9551	9513	11114
Poplars Avenue (West) (Site entrance)	0	1322	0	1373
Radley Lane	135	135	148	148
Sandy Lane	4667	5406	6400	6642
Sandy Lane West	7669	9766	11742	13539
Statham Avenue	4403	5639	5108	6107

Road Link	AAWT18 DMOY	AAWT18 DSOY	AAWT18 DMFY	AAWT18 DSFY
Windermere Avenue (Grasmere Ave to Poplars Ave)	103	339	187	517

11.6 Assessment of Effects

- 11.6.1 The effects of noise have been determined at the existing and proposed receptors due to existing noise sources in the area and noise generated by the development. Where a magnitude of impact at a receptor is determined to cause a significant adverse effect, mitigation is proposed, with a final residual effect determined.

Noise Impacts Scoped Out

- 11.6.2 At this stage of the process, construction phasing and methodologies will not be possible to determine with any accuracy. Construction in each designated phase is by its very nature temporary and transient with each new phase providing further screening to both existing road traffic sources and ongoing construction activities. Construction traffic flows have not been provided as part of the assessment.
- 11.6.3 A common planning condition is the production of a Construction Environmental Management Plan (CEMP), either for the site as a whole, or for each individual parcel of the site which may be brought forward at different times by individual developers and their chosen construction contractor.
- 11.6.4 The CEMP will determine hours of construction operations and include a Noise and Vibration Management Plan (NVMP) to control potentially noisy activities with reference to noise thresholds determined in BS5228:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites [Ref 11.9]. Contractors following guidance and Best Practicable Means detailed in the NVMP and CEMP will ensure the impact of construction activities is Negligible to Minor Adverse.
- 11.6.5 It is proposed that the development contain local amenities such as a care home, school and various other uses such as shops and hot food take away. Where it is intended that a development have requirement for fixed plant, such as air conditioning or kitchen extract, a noise survey should be undertaken when the proposals are determined to ensure noise generated does not result in a significant effect at local sensitive receptors. The assessment should be undertaken with reference to BS4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound [Ref 11.10].

Embedded Mitigation

- 11.6.6 It is proposed that a noise barrier of at least 4.0 m in height will be located along the northern boundary of the site. It is intended that a 4.0 m fence be erected along the northern boundary, which will be designed to avoid conflict with the existing National Grid infrastructure.
- 11.6.7 The barrier is to be constructed from continuous, imperforate material with a minimum mass of 12 kg/m² and is to extend from the existing ground level to a minimum height of 4.0 m. Close-boarded or overlapped timber panelling would also be suitable. Alternatively, a proprietary acoustic fence with a minimum weighted sound reduction index of 25 dB R_w would be appropriate.
- 11.6.8 A buffer zone will be included on the southern side of the barrier to allow further attenuation of road traffic noise from the M62. Detailed design of the residential developments to be constructed on the site will be required to follow the principals of good acoustic design when positioning, orienting and designing the layout of future residential plots.
- 11.6.9 It is proposed that all plots immediately south of the barrier be four stories tall, and in a tight configuration to allow building massing to provide a further noise barrier. Private outdoor amenity spaces, such as gardens, should be designed in areas with protection from the proposed building massing (south facing).
- 11.6.10 Vehicles entering and leaving the proposed development will utilise existing roads. Where appropriate it is proposed to reduce the speed limit on roads within the existing residential development. Whilst this is part of the mitigation strategy developed as part of the Highways and Transportation chapter of this ES, the results are also likely to have a beneficial effect on local road traffic noise.

Assessment of Noise from M62

- 11.6.11 At this stage of the development proposals, there is no indicative masterplan showing the arrangement of plots. The Parameters Plan shown in **Appendix APP6**, produced to inform the development indicates the location of where plots will be located closest to the M62, which is identified as the worst-case noise source for day and night.
- 11.6.12 Typical L_{Amax} noise events at night are likely to be within 15 dB of the typical $L_{Aeq,8h}$ at a receptor, therefore if a façade meets the required mitigation to meet internal $L_{Aeq,8h}$ criteria of 30dB(A), it will also meet the criteria of 45 dB L_{AFmax} .

11.6.13 It is proposed that the closest developments to the M62 will be 4 story buildings with a ridge height of approximately 12.0 m. To inform this assessment, an indicative worst-case residential receptor has been included in noise modelling, with a northern façade facing onto the road noise source. Indicative façade levels at heights simulating ground to 3rd floor window heights have been predicted as shown in Table 11.13. Internal levels are assumed to be 15 dB below the façade levels, this is assuming typical noise attenuation provided by an open window. The magnitude of impact is determined using the criteria detailed in Table 11.9.

Table 11.13: Predicted worst case façade levels

Floor	Height	Daytime				Night-time			
		Façade $L_{Aeq,16h}$	BS8233 criteria	Internal $L_{Aeq,16h}$	Impact	Façade $L_{Aeq,8h}$	BS8233 criteria	Internal $L_{Aeq,8h}$	Impact
Ground	1.5 m	67	35	52	Major	62	30	47	Major
1 st	4.0 m	69	35	54	Major	65	30	50	Major
2 nd	6.5 m	70	35	55	Major	66	30	51	Major
3 rd	9.0m	72	35	57	Major	67	30	52	Major

11.6.14 It can be seen from Table 11.13, that the internal noise levels in living rooms and bedrooms the magnitude of impact will be Major.

11.6.15 Existing noise levels at the most exposed residential receptors will have a **significant adverse effect**.

11.6.16 In order for the effect internal noise levels to be considered not significant, appropriate mitigation will need to be utilised, including closed windows with suitable glazing specifications, alternative forms of ventilation from quiet facades, appropriate building envelope and roof structures.

11.6.17 Building massing should be used at the design stage of each individual parcel of the development to ensure that the private outdoor amenity space for individual plots should be below 55 dB $L_{Aeq,16h}$.

Assessment of Operational Phase Traffic

11.6.18 The magnitude of impact due to changes in road traffic noise levels is determined through comparison of noise in the short-term change at the year of opening (2022), i.e. DSOY vs DMOY. Further context to the initial assessment of significance is given through comparison of noise levels in the long term,

i.e. DSFY vs DMOY and comparison of noise levels in the absence of the proposed scheme, i.e. DMFY vs DMOY.

11.6.19 All receptor locations are shown in **Figure N7**. In some locations multiple receptors are close together to ensure a worst-case façade is identified.

11.6.20 Table 11.14, Table 11.15 and Table 11.16 show the predicted absolute noise level for each scenario, the difference in short or long term noise level and the magnitude of impact at each of the indicative receptors identified. All noise levels are given as $L_{A10,18h}$.

11.6.21 Difference plots for the short-term and long-term assessments are shown in **Figure N8** and **N9** respectively.

Table 11.14: Short Term Assessment (DSOY – DMOY)

Receptor	Address	dB $L_{A10,18h}$ DMOY	dB $L_{A10,18h}$ DSOY	dB $L_{A10,18h}$ Difference	Impact
R_01	5 Birch Avenue	61.5	61.1	-0.4	Negligible beneficial
R_02	375 Poplars Ave	62.2	61.9	-0.3	Negligible beneficial
R_03	352 Poplars Ave	61.0	61.3	0.3	Negligible adverse
R_04	264 Poplars Ave	63.0	63.4	0.4	Negligible adverse
R_05	28 Cotswold Road	58.1	58.5	0.4	Negligible adverse
R_06	54 Cleveland Road	60.9	61.8	0.9	Negligible adverse
R_07	6 Sandy Lane West	63.7	64.7	1.0	Minor adverse
R_08	31 Howson Road	52.4	53.5	1.1	Minor adverse
R_09	84 Northway	59.0	58.8	-0.2	Negligible beneficial
R_10	79 Northway	58.5	59.4	0.9	Negligible adverse
R_11	221 Grasmere	56.6	56.2	-0.4	Negligible beneficial
R_12	57 Coldstream Close	59.6	61.5	1.9	Minor adverse
R_13	34 Mill Lane	55.5	56.1	0.6	Negligible adverse
R_14	6 Mill Lane	62.1	59.4	-2.7	Minor beneficial
R_15	55 Mill Lane	53.4	56.4	3.0	Moderate adverse
R_16	12 Radley Lane	51.9	54.1	2.2	Minor adverse
R_17	45 Ballater Drive	58.2	56.2	-2.0	Minor beneficial

Receptor	Address	dB L _{A10,18h} DMOY	dB L _{A10,18h} DSOY	dB L _{A10,18h} Difference	Impact
R_18	37 Shetland Close	60.3	62.1	1.8	Minor adverse
R_19	Fairhaven Care Home	53.6	54.5	0.9	Negligible adverse
R_20	141 Newhaven Road	64.8	60.0	-4.8	Moderate beneficial
R_21	21 Windermere Avenue	54.1	54.4	0.3	Negligible adverse
R_22	126 Capesthorne Road	60.6	60.3	-0.3	Negligible beneficial
R_23	136 Poplars Avenue	64.1	64.0	-0.1	Negligible beneficial
R_24	713 Winwick Road	74.1	74.1	0.0	No Change
R_25	463 Winwick Road	72.1	72.2	0.1	Negligible adverse
R_26	70 Long Lane	67.8	67.9	0.1	Negligible adverse
R_27	60 Capesthorne Road	63.2	64.8	1.6	Minor adverse
R_28	72 Poplars Avenue	65.6	65.0	-0.6	Negligible beneficial
R_29	59 Statham Avenue	63.3	63.9	0.6	Negligible adverse
R_30	100 Sandy Lane	63.1	63.5	0.4	Negligible adverse
R_31	323 Greenwood Crescent	59.1	59.4	0.3	Negligible adverse
R_32	8 Lancaster Close	62.1	63.1	1.0	Minor adverse
R_33	39 Fisher Avenue	60.4	61.8	1.4	Minor adverse
R_34	22 St Mawgan Court	66.4	66.7	0.3	Negligible adverse
R_35	14 Orford Green	65.9	66.2	0.3	Negligible adverse
R_36	61 Mill Lane	57.4	59.3	1.9	Minor adverse
R_37	Dundee Close	56.5	56.6	0.1	Negligible adverse
R_38	Lavender Barn, Mill Lane	51.8	55.8	4.0	Moderate adverse

Table 11.15: Long Term Assessment (DSFY – DMOY)

Receptor	Address	dB L _{A10,18h} DMOY	dB L _{A10,18h} DSFY	dB L _{A10,18h} Difference	Impact
R_01	5 Birch Avenue	61.5	61.4	-0.1	Negligible beneficial
R_02	375 Poplars Ave	62.2	62.7	0.5	Negligible adverse
R_03	352 Poplars Ave	61.0	62.4	1.4	Negligible adverse
R_04	264 Poplars Ave	63.0	64.8	1.8	Negligible adverse
R_05	28 Cotswold Road	58.1	58.5	0.4	Negligible adverse

Receptor	Address	dB L _{A10,18h} DMOY	dB L _{A10,18h} DSFY	dB L _{A10,18h} Difference	Impact
R_06	54 Cleveland Road	60.9	63.4	2.5	Negligible adverse
R_07	6 Sandy Lane West	63.7	66.0	2.3	Negligible adverse
R_08	31 Howson Road	52.4	53.9	1.5	Negligible adverse
R_09	84 Northway	59.0	58.6	-0.4	Negligible beneficial
R_10	79 Northway	58.5	60.8	2.3	Negligible adverse
R_11	221 Grasmere	56.6	56.6	0.0	No Change
R_12	57 Coldstream Close	59.6	62.2	2.6	Negligible adverse
R_13	34 Mill Lane	55.5	56.6	1.1	Negligible adverse
R_14	6 Mill Lane	62.1	59.2	-2.9	Negligible beneficial
R_15	55 Mill Lane	53.4	56.6	3.2	Minor adverse
R_16	12 Radley Lane	51.9	54.0	2.1	Negligible adverse
R_17	45 Ballater Drive	58.2	56.3	-1.9	Negligible beneficial
R_18	37 Shetland Close	60.3	62.6	2.3	Negligible adverse
R_19	Fairhaven Care Home	53.6	54.7	1.1	Negligible adverse
R_20	141 Newhaven Road	64.8	60.0	-4.8	Minor beneficial
R_21	21 Windermere Avenue	54.1	54.9	0.8	Negligible adverse
R_22	126 Capesthorne Road	60.6	60.5	-0.1	Negligible beneficial
R_23	136 Poplars Avenue	64.1	64.9	0.8	Negligible adverse
R_24	713 Winwick Road	74.1	74.7	0.6	Negligible adverse
R_25	463 Winwick Road	72.1	72.6	0.5	Negligible adverse
R_26	70 Long Lane	67.8	68.2	0.4	Negligible adverse
R_27	60 Capesthorne Road	63.2	66.0	2.8	Negligible adverse
R_28	72 Poplars Avenue	65.6	65.6	0.0	No Change
R_29	59 Statham Avenue	63.3	64.3	1.0	Negligible adverse
R_30	100 Sandy Lane	63.1	63.9	0.8	Negligible adverse
R_31	323 Greenwood Crescent	59.1	59.8	0.7	Negligible adverse
R_32	8 Lancaster Close	62.1	64.2	2.1	Negligible adverse
R_33	39 Fisher Avenue	60.4	63.4	3.0	Minor adverse
R_34	22 St Mawgan Court	66.4	67.2	0.8	Negligible adverse
R_35	14 Orford Green	65.9	66.8	0.9	Negligible adverse

Receptor	Address	dB L _{A10,18h} DMOY	dB L _{A10,18h} DSFY	dB L _{A10,18h} Difference	Impact
R_36	61 Mill Lane	57.4	60.6	3.2	Minor adverse
R_37	Dundee Close	56.5	57.6	1.1	Negligible adverse
R_38	Lavender Barn, Mill Lane	51.8	55.9	4.1	Minor adverse

Table 11.16: Non Project Change (DMFY – DMOY)

Receptor	Address	dB L _{A10,18h} DMOY	dB L _{A10,18h} DMFY	dB L _{A10,18h} Difference	Impact
R_01	5 Birch Avenue	61.5	62.1	0.6	Negligible adverse
R_02	375 Poplars Ave	62.2	63.3	1.1	Negligible adverse
R_03	352 Poplars Ave	61.0	62.4	1.4	Negligible adverse
R_04	264 Poplars Ave	63.0	64.5	1.5	Negligible adverse
R_05	28 Cotswold Road	58.1	58.5	0.4	Negligible adverse
R_06	54 Cleveland Road	60.9	62.8	1.9	Negligible adverse
R_07	6 Sandy Lane West	63.7	65.5	1.8	Negligible adverse
R_08	31 Howson Road	52.4	53.0	0.6	Negligible adverse
R_09	84 Northway	59.0	59.4	0.4	Negligible adverse
R_10	79 Northway	58.5	60.4	1.9	Negligible adverse
R_11	221 Grasmere	56.6	57.2	0.6	Negligible adverse
R_12	57 Coldstream Close	59.6	60.4	0.8	Negligible adverse
R_13	34 Mill Lane	55.5	56.1	0.6	Negligible adverse
R_14	6 Mill Lane	62.1	62.6	0.5	Negligible adverse
R_15	55 Mill Lane	53.4	54.0	0.6	Negligible adverse
R_16	12 Radley Lane	51.9	52.4	0.5	Negligible adverse
R_17	45 Ballater Drive	58.2	58.7	0.5	Negligible adverse
R_18	37 Shetland Close	60.3	61.0	0.7	Negligible adverse
R_19	Fairhaven Care Home	53.6	54.2	0.6	Negligible adverse
R_20	141 Newhaven Road	64.8	65.3	0.5	Negligible adverse
R_21	21 Windermere Avenue	54.1	54.8	0.7	Negligible adverse
R_22	126 Capesthorne Road	60.6	60.7	0.1	Negligible adverse
R_23	136 Poplars Avenue	64.1	65.4	1.3	Negligible adverse

Receptor	Address	dB L _{A10,18h} DMOY	dB L _{A10,18h} DMFY	dB L _{A10,18h} Difference	Impact
R_24	713 Winwick Road	74.1	74.6	0.5	Negligible adverse
R_25	463 Winwick Road	72.1	72.5	0.4	Negligible adverse
R_26	70 Long Lane	67.8	68.2	0.4	Negligible adverse
R_27	60 Capesthorne Road	63.2	64.3	1.1	Negligible adverse
R_28	72 Poplars Avenue	65.6	66.3	0.7	Negligible adverse
R_29	59 Statham Avenue	63.3	63.5	0.2	Negligible adverse
R_30	100 Sandy Lane	63.1	64.0	0.9	Negligible adverse
R_31	323 Greenwood Crescent	59.1	59.3	0.2	Negligible adverse
R_32	8 Lancaster Close	62.1	62.9	0.8	Negligible adverse
R_33	39 Fisher Avenue	60.4	62.6	2.2	Negligible adverse
R_34	22 St Mawgan Court	66.4	66.6	0.2	Negligible adverse
R_35	14 Orford Green	65.9	66.5	0.6	Negligible adverse
R_36	61 Mill Lane	57.4	58.1	0.7	Negligible adverse
R_37	Dundee Close	56.5	57.1	0.6	Negligible adverse
R_38	Lavender Barn, Mill Lane	51.8	52.3	0.5	Negligible adverse

11.6.22 Table 11.17 provides a summary of the data in Table 11.14. It shows that there are 9 receptors with an impact of Minor adverse and 2 receptors with an impact of Moderate adverse. The initial assessment of operational noise significance is a likely significant effect where a Moderate adverse impact is identified.

Table 11.17: Summary of short-term operational noise assessment

Short Term (2022 DMOY vs 2022 DSOY)			
Change in Noise Level			Daytime
			Number of dwellings
Increase	Negligible	0.1-0.9	16
	Minor	1.0-2.9	9
	Moderate	3.0-4.9	2
	Major	5.0+	0
No Change		0	1
Decrease	Negligible	0.1-0.9	7
	Minor	1.0-2.9	2
	Moderate	3.0-4.9	1
	Major	5+	0
Total			38

11.6.23 Table 11.18 provides a summary of the data in Table 11.14. It shows that there are 4 receptors with an impact of Minor adverse and 0 receptors with an impact of Moderate adverse.

Table 11.18 Summary of long-term operational noise assessment

Long Term (2022 DMOY vs 2037 DSFY)			
Change in Noise Level			Daytime
			Number of dwellings
Increase	Negligible	0.1-2.9	26
	Minor	3-4.9	4
	Moderate	5-9.9	0
	Major	10+	0
No Change		0	2
Decrease	Negligible	0.1-2.9	5
	Minor	3-4.9	1
	Moderate	5-9.9	0
	Major	10+	0
Total			38

- 11.6.24 Where the assessment detailed in Table 11.14 indicates a Minor, Moderate or Major magnitude of impact, the final operational significance is determined with reference to local circumstances.
- 11.6.25 Where a receptor has a Minor impact due to changes in road traffic noise, it is noted that the do-something (DSOY and DSFY) absolute noise levels predicted are below 68dB $L_{A10,18h}$, and therefore below SOAEL. As such the initial assessment of Not Significant will not change.
- 11.6.26 Two receptors (R_15 and R_38) are exposed to a Moderate Impact in the short term and are therefore initially considered to be Significantly affected by changes in road traffic noise. Both receptors are along Mill Lane, with their rear façades facing the proposed entrance road over land currently used as playing fields. Considering their local circumstances, it is not appropriate to change this initial assessment.
- 11.6.27 It is concluded that changes to road traffic noise at two identified receptors will have a **significant adverse effect** in the short term.
- 11.6.28 In order for the receptors in this area to reduce the change in road traffic noise to a minor or negligible impact, and therefore no longer a significant effect, mitigation will be required.

11.7 Mitigation

- 11.7.1 Where a significant effect has been identified at a receptor, mitigation will be required to reduce the impact as far as possible. This section of the ES chapter describes the possible mitigation to be utilised at the site in order to achieve either the required internal noise levels for new residential dwellings, or reduce the change in noise levels due increased traffic flows on access roads.

Site Suitability for Residential Development

- 11.7.2 An indicative 4 story residential block was modelled at a position close to the M62, representative of the closest residential faced to the noise source. The worst-case façade levels predicted are detailed in Table 11.13. A night time predicted 3rd floor façade level of 67 dB $L_{Aeq,8h}$ would be considered the worst case, requiring façade mitigation of 37 dB to achieve the internal criteria of 30 dB $L_{Aeq,8h}$.
- 11.7.3 Façade mitigation calculations are detailed in **Appendix N5** and show that internal levels for a typical small bedroom (3m façade length, 21m³ volume and 1.2m² glazed area) can be achieved using the following example faced element design:

- Glazing – 10/12/6 with Sound Reduction Index (SRI) of 33dB R_w+C_{tr}
- Ventilation – Acoustic rated trickle ventilation with Level Difference $D_{n,e} + C_{tr}$ of 44 dB
- External Wall – Double leaf 112mm brickwork, 50mm cavity, rigid wall ties with SRI of 48 dB R_w+C_{tr}
- Roof and Ceiling - Tiles on felt, pitched roof with 270 mm wool on plasterboard ceiling consisting of 2 x 12.5mm plasterboard with SRI of 42 dB R_w+C_{tr}

11.7.4 Plots closest to the road should be designed to provide appropriate ventilation without a requirement to open windows. This does not mean that windows should be fully sealed and unopenable. It may be required that windows are openable to provide rapid purge ventilation or emergency egress from a building.

11.7.5 Possible ventilation schemes for the development include:

- Acoustic trickle ventilation in window frames using specialist acoustic products (assumed in calculations).
- Through wall ventilation units with acoustic covers, linings and internal structure,
- Positive input ventilation (PIV) from a roof space
- Mechanical ventilation drawing air from a quiet façade

Operational Phase Traffic

11.7.6 The receptors where the magnitude of significance was found to be moderate in the short term were those located to the north of the proposed access route into the east of the site over the existing playing fields off Mill Lane, to the north of The Millhouse Pub.

11.7.7 At this location it will not be possible to remove or replace the proposed new traffic noise source and as such the best form of mitigation will be a barrier along the north side of the new road. This should be 2.0 m in height and can be formed of a bund, acoustic fence or a combination of the two. An indicative location is identified on **Figure N10**.

11.7.8 Where a fence is required it is to be constructed from continuous, imperforate material with a minimum mass of 12 kg/m² and is to extend from the existing ground level, or top of a bund to a minimum height of 2.0 m above the existing ground level. Close-boarded or overlapped timber panelling would also be suitable. Alternatively, a proprietary acoustic fence with a minimum weighted sound reduction index of 25 dB R_w would be appropriate.

11.7.9 Trees and foliage can be used to landscape around the barrier but should not be relied upon for noise mitigation in isolation.

11.7.10 Indicative noise modelling has been undertaken to assess the change in magnitude of impact with the inclusion of a barrier as suggested.

11.7.11 Table 11.19 shows the short-term difference between the do minimum and do something scenarios for the receptors identified experiencing a Moderate Impact.

11.7.12 Difference plots for the mitigated short-term assessment is shown in **Figure N11**.

Table 11.19: Short Term Assessment (DSOY – DMOY) with and without mitigation

Receptor	Address	dB L _{A10,18h} DMOY	dB L _{A10,18h} DSOY	dB L _{A10,18h} Difference	Impact
Without Mitigation					
R_15	55 Mill Lane	53.4	56.4	3.0	Moderate adverse
R_38	Lavender Barn, Mill Lane	51.8	55.8	4.0	Moderate adverse
With Mitigation					
R_15	55 Mill Lane	53.4	55.1	1.7	Minor adverse
R_38	Lavender Barn, Mill Lane	51.8	54.6	2.8	Minor adverse

11.8 Residual Effects

Assessment of Existing Noise Sources

11.8.1 Assuming the developers of the site include the appropriate façade mitigation detailed, the internal noise levels will have a Negligible magnitude of impact and the effect of existing noise will be **Not Significant**.

Assessment of Operational Phase Traffic

- 11.8.2 The results in Table 11.19 show that the mitigation measures suggested will reduce absolute noise level predicted as part of the with development scenario in the short term (DSOY). The difference compared to the DMOY scenario, will result in a Minor magnitude of impact and the effect of changes in operational traffic noise will be **Not Significant**.

11.9 References

Table 0.20: References

Reference	Document
11.1	ProPG: Planning and Noise, New Residential Development, May 2017
11.2	BS8233:2014: Guidance on sound Insulation and noise reduction for buildings
11.3	Design Manual for Roads and Bridges LA111 Noise and Vibration Rev 0, Nov 2019
11.4	Noise Policy Statement for England (NPSE), DEFRA, March 2010
11.5	National Planning Policy Framework, MHCLG, February 2019
11.6	Planning Practice Guidance – Noise March 2012
11.7	World Health Organisation (WHO) document, Guidelines for Community Noise (1999)
11.8	CRTN, Department of Transport, Welsh Office, 1988
11.9	BS5228:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites
11.10	BS4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound

12.0 AIR QUALITY

This section replaces in entirety the corresponding section of the submitted ES and addendum 1.

12.1 Introduction

- 12.1.1 An assessment of the likely significant effects from emissions to air from, or associated with, the Proposed Development and the potential effects upon relevant receptors has been under-taken by Miller Goodall Ltd.
- 12.1.2 The potential effects of the Proposed Development on local air quality relate to dust and road traffic associated with construction activities, and emissions from road traffic associated with the operation of the Proposed Development.
- 12.1.3 This chapter of the Environmental Statement (ES) describes the legislative framework applicable to air quality and how the effects of emissions from road traffic associated with the Proposed Development on air quality have been assessed in relation to such matters as the study area, assessment methodology and significance criteria.
- 12.1.4 The baseline conditions of the Proposed Development Site (PDS) and adjacent areas that may be affected by the Proposed Development at the time of the assessment are presented along with the results of the assessment. Where appropriate, mitigation measures proposed to reduce or remove any potential impacts, are described. Finally, the likely residual impact of the Proposed Development on air quality is assessed.
- 12.1.5 Existing local air quality may impact upon future residents of the Proposed Development and thus the suitability of the site itself for residential use is assessed within a separate standalone document which is shown at **ES Volume 9: Appendix AQ1**.

12.2 Legislation, Policy and Guidance

- 12.2.1 This section provides details of the legislation, policy and guidance relevant to the assessment of air quality effects associated with the Proposed Development.

HMSO, (2010) Air Quality Standards Regulations 2010

- 12.2.2 European Union (EU) legislation forms the basis for current UK air quality legislation and policy. The EU Air Quality Framework Directive 96/62/EC (Ref 12.1) on Ambient Air Quality Assessment and Management came into force in September 1996. This is a framework for tackling air quality through European-wide air quality limit values in a series of daughter directives, prescribing how air quality

should be assessed and managed by the Member States. Directive 96/62/EC and the first three daughter objectives were combined to form the new EU Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe (Ref 12.2), which came into force June 2008. The Air Quality Standards Regulations 2010 (Ref 12.3) set out the combined Daughter Directive limit values and interim targets for Member State compliance.

Ministry of Housing, Communities and Local Government, (HCLG) (February 2019) National Planning Policy Framework (NPPF).

- 12.2.3 The NPPF (Ref 12.4) advises that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives). One of these is an environmental objective which is described as follows in Para 8 c;

“to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.”

- 12.2.4 At para 170 we are advised that

“Planning policies and decisions should contribute to and enhance the natural and local environment by:

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.

- 12.2.5 In direct reference to air quality Para 181 states:

“Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.”

Planning Practice Guidance – Air Quality

- 12.2.6 Planning Practice Guidance (PPG) (Ref 12.5) for the NPPF has been issued in respect of Air Quality. It explains that whether air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is likely to generate an air quality impact in an area where air quality is known to be poor. They could also arise where the

development is likely to adversely impact upon the implementation of air quality strategies and action plans and/or, in particular, lead to a breach of EU legislation (including that applicable to wildlife).

12.2.7 When deciding whether air quality is relevant to a planning application, Paragraph 005 of the PPG states that considerations could include whether the development would:

- Significantly affect traffic in the immediate vicinity of the proposed development site or further afield. This could be by generating or increasing traffic congestion; significantly changing traffic volumes, vehicle speed or both; or significantly altering the traffic composition on local roads. Other matters to consider include whether the proposal involves the development of a bus station, coach or lorry park; adds to turnover in a large car park; or result in construction sites that would generate large Heavy Goods Vehicle flows over a period of a year or more;
- Introduce new point sources of air pollution. This could include furnaces which require prior notification to local authorities; or extraction systems (including chimneys) which require approval under pollution control legislation or biomass boilers or biomass-fuelled CHP plant; centralised boilers or CHP plant burning other fuels within or close to an air quality management area or introduce relevant combustion within a Smoke Control Area;
- Expose people to existing sources of air pollutants, for example by building new homes, workplaces or other development in places with poor air quality;
- Give rise to potentially unacceptable impact (such as dust) during construction for nearby sensitive locations; and
- Affect biodiversity.

12.2.8 At Paragraph 006, the PPG goes on to state that where there are concerns about air quality, the local planning authority may want to know about:

- The 'baseline' local air quality;
- Whether the proposed development could significantly change air quality during the construction and operational phases; and/or
- Whether there is likely to be a significant increase in the number of people exposed to a problem with air quality, such as when new residential properties are proposed in an area known to experience poor air quality.

12.2.9 The PPG further advises at Paragraph 006 that air quality assessments should be proportionate to the nature and scale of development proposed and the level of concern about air quality, and because of this are likely to be location specific and should be agreed between the local planning authority and applicant before it is commissioned.

Local Planning Policy

12.2.10 The development plan for Warrington (Ref 12.6) comprises the local plan core strategy (as quashed) 2014. Policy QE6 – Environmental and Amenity Protection – states that the Council will *“support development which would not lead to adverse impact on the environment or amenity of future occupiers or those currently occupying adjoining or nearby properties or does not have an unacceptable impact on the surrounding area.”*

12.2.11 The Local Plan is the statutory development plan for the whole of the Borough and is used in the determination of planning applications. The Local Plan is currently being developed by WBC with air quality modelling and assessments, linked to traffic data, produced in order to allow a number of scenarios to be evaluated.

12.2.12 The Local Plan will include measures that contribute to improving air quality in Warrington, including:

- Reducing the need to travel
- Supporting the delivery of new strategic and local infrastructure
- Locating development in suitable locations through allocation of land and buffer zones to major roads
- Creating high quality built environments
- Green infrastructure

Air Quality Action Plan (AQAP)

12.2.13 Produced as part of the Council’s statutory duties required by the Local Air Quality Management framework, this document (Ref 12.7) outlines the actions WBC will take to improve air quality in Warrington between 2017 and 2022. This action plan replaces the previous action plan which ran from 2008 to 2017, although many of the actions remain in place and are on-going. This plan has been introduced to target improvements in these AQMAs and where possible to deliver wider betterment in levels across the town.

12.2.14 The AQAP describes the key priorities for Warrington Borough Council as;

- Priority 1 – Reduce traffic volume and improve flows
- Priority 2 - Reduce emissions from HGVs and LGVs
- Priority 3 – Reduce emissions from bus and public transport including taxis
- Priority 4 – Reduce exposure for those who are most vulnerable
- Priority 5 – Ensure that future development is designed to reduce exposure and improve air quality

WBC (May 2013), Environmental Protection Supplementary Planning Document (SPD)

12.2.15 This document (Ref 12.8) lays out WBC's approach to dealing with Environmental Protection, including air quality. The SPD advises that the Council will, in relation to air quality,

"Consider the relative merit of the application with regard to national and local planning policy. The relative weight given to air quality will depend on the significance of any impact. The Council is committed to reducing air quality levels in places where people live, work and relax and accepts that the National Air Quality Objectives provide the basis for assessing significance as detailed in this document. Any development that would interfere with an Air Quality Action Plan, result in the breach of a relevant objective or create a potential new AQMa will be treated as significant."

12.2.16 The AQAP for WBC advises that *"The current supplementary planning document (SPD) was produced in 2013 and requires updating to include new guidance."*

Defra, (2018) Local Air Quality Management Technical Guidance TG(16) (LAQMTG16)

12.2.17 This technical guidance (Ref 12.9), provided by Defra, is designed to support local authorities in carrying out their duties in relation to local air quality management. It provides guidance on air quality monitoring, and modelling.

Defra Background Maps

12.2.18 Air pollution background concentration maps (Ref 12.10) are published by Defra and the Devolved Administrations to assist local authorities in carrying out Review and Assessment of local air quality as part of their duties under the Environment Act 1995.

12.2.19 The main purpose of the background maps is to provide estimates of background concentrations for specific pollutants. These can then be used in air quality assessments to better understand the contribution of local sources to total pollutant concentrations. They provide information on how pollutant concentrations change over time and across a wide area; they also provide an estimated breakdown of the relative sources of pollution. The maps allow for the assessment of new pollutant sources that are introduced into an area and the impact they may have upon local air quality.

12.2.20 The current 2017 reference year background maps were considered within this assessment.

Defra Air Quality Management Area Maps

12.2.21 This online resource provided by Defra (Ref 12.11) identifies the locations of air quality management areas declared by local authorities.

Defra NO_x to NO₂ Calculator

- 12.2.22 This calculator allows users to derive nitrogen dioxide (NO₂) from oxides of nitrogen (NO_x) wherever NO_x is predicted by modelling emissions from roads. The calculator can also be used to calculate the road component of NO_x from roadside NO₂ diffusion tube measurements. Version v7.1 of the calculator (ref 12.12) was utilised in this assessment.

IAQM, (2014) Assessment of Dust from Demolition and Construction

- 12.2.23 This document (Ref 12.13) provides guidance on how to assess air quality impacts from construction. It provides a method for classifying the significance of effect from construction activities based on the magnitude of dust impact, proximity of the site to the closest receptors and background airborne particles of mean aerodynamic diameter less than ten micrometres (PM₁₀) concentrations. It also suggests criteria for the classification of dust classes to be used along with professional judgement. The guidance recommends that once the significance of effect from construction is identified, the appropriate mitigation measures are implemented. From experience, it is noted that once mitigation measures are applied the effects are reduced to negligible levels.

IAQM, (January 2017) Land Use Planning and Development Control: Planning for Air Quality

- 12.2.24 This document (Ref 12.14) provides guidance on how to assess air quality impacts of developments. It is applicable to assessing the effects of changes in exposure of members of the public resulting from residential and mixed-use developments

WBC (June 2019) 2019 Air Quality Annual Status Report (ASR)

- 12.2.25 This document (Ref 12.15) provides information in respect of the review and assessment work completed by WBC in relation to local air quality within its administrative area.

12.3 Assessment Methodology

- 12.3.1 This section of the ES chapter describes how the assessment of the potentially significant effects on air quality has been completed, including describing the study area, modelling completed, and the method of assessing significance.

Scoping

- 12.3.2 Neither CHP plants nor biomass boilers are proposed within the Proposed Development. The dwellings within the Proposed Development will each have heating and hot water, which are likely to be provided by high efficiency condensing combination boilers. A typical boiler will emit less than 5 mg/s of NO_x. Consequently, combustion plant emissions are unlikely to have a significant effect on local air quality

- 12.3.3 The potentially significant effects of the Proposed Development on local air quality, consequently, relate solely to dust emissions associated with the construction phase and road traffic emissions associated with the operational phase. There are no designated nature conservation sites within 200 m of the roads within the study area. Effects on ecology are dealt with in **Chapter 6.0**; this chapter deals with the effects on local air quality.

The Study Area

- 12.3.4 In accordance with IAQM guidance “*Assessment of Dust from Demolition and Construction*” (Ref 12.13) the study area in relation to dust associated with construction activities has been defined as 50m from the routes used by construction vehicles on the public highway, up to 500m from the site entrance, and 350m around the location of construction activities. The extent of the study area in relation to construction activities (dust) is shown in **ES Volume 9: Figure AQ6**.
- 12.3.5 The extent of the study area in relation to road traffic emissions has been informed by the influence of road traffic associated with the Proposed Development, the location of relevant sensitive receptors and the presence of air quality management areas (AQMA) around the site. The extent of the study area in relation to operational road traffic emissions is shown in **ES Volume 9: Figure AQ7**.

Baseline Surveys

- 12.3.6 This section describes the desk-based research, field surveys, and consultation undertaken to date to identify the baseline environment in the study areas.

Desk Based Research

- 12.3.7 A review of existing air quality information within the WBC 2019 Air Quality Annual Status Report (Ref 12.15) has been completed. This includes a review of existing levels of pollutants of interest, NO₂, PM₁₀ and airborne particles of mean aerodynamic diameter less than 2.5 micrometres (PM_{2.5}).
- 12.3.8 The location of areas of known poor air quality (in particular the location of nearby AQMA) in relation to the study area has been identified using the Department of Environment Food and Rural Affairs (Defra) interactive map (Ref 12.11).
- 12.3.9 The locations and results of NO₂ monitoring using diffusion tubes and automatic monitoring stations around the site for 2018 have also been identified from the ASR 2019 (Ref 12.15). This monitoring is carried out by WBC and monitoring results for the period October 2018 to September 2019 have also been provided by WBC in the form of an Excel spreadsheet (Ref 12.16). The locations of these sites are shown in **ES Volume 9: Figure AQ8**
- 12.3.10 Background concentrations of NO₂ and PM₁₀ have been obtained from the Defra background maps (Ref 12.10).

Field Survey

12.3.11 Monitoring of existing levels of NO₂ has been carried out at seven locations around the Proposed Development since February 2019. The locations of these sites are also shown in **ES Volume 9: Figure AQ8**.

12.3.12 The positioning, installation and collection of diffusion tubes was undertaken by Ground Gas Solutions Ltd. Diffusion tubes were provided and analysed by Gradko Environmental; the same company used by WBC to analyse their diffusion tubes. The tubes were changed in line with suggested exposure periods provided by Defra. Details of the monitoring methodology are provided in **ES Volume 9: Appendix AQ2**,

Consultation

12.3.13 Consultation has been completed with Mr Richard Moore within the Environmental Health Department of WBC. **Table 12.1** provides a summary of the consultation activities undertaken in support of the preparation of this Chapter. Copies of relevant correspondence are provided in **ES Volume 9: Appendix AQ3**. Mr Moore's comments have been addressed within the assessments undertaken.

Table 12.1 – Summary of Consultation with WBC

Date	Summary of consultation
January 2019	<p>First exchange of emails between Lesley Goodall and Richard Moore concerning monitoring and modelling of the proposed development. Annualisation and bias adjustment as well as preferred locations of NO₂ monitoring discussed.</p> <p>Briefing note re monitoring locations suggested 8 monitoring locations.</p> <p>Other inputs specified, for example meteorological data.</p>
February 2019	<p>Meeting at WBC. Lesley Goodall and Richard Moore present.</p> <p>Scenarios agreed. Also agreed that traffic data would come from WBC Saturn traffic model.</p> <p>Agreed PM_{2.5} to be assessed against the WHO value.</p>
March 2019	<p>Email exchange between Richard Moore and Lesley Goodall.</p> <p>Roads to be included within the model agreed.</p>
April 2019	<p>ES Scoping Opinion sought from WBC in respect of anticipated planning application for the site. Issues scoped in relation to air quality included;</p> <ul style="list-style-type: none"> • Road traffic network to be assessed; • Assessment scenarios • Source of traffic data; • Traffic speeds; • Emission factors • Background concentrations • Model verification • Topography.; • Significant criteria
May 2019	<p>Response to Scoping Opinion – Extract provided;</p> <p><i><u>“WBC Environmental Protection – The noise and air quality impacts of the project, and potential mitigation, has been the subject of very extensive exploration – latterly as part of formal pre-application discussions with the Council. It is agreed that the cumulative effects in respect of noise and air quality should be scoped into the EIA.”</u></i></p>
January 2020	<p>Email exchange between Lesley Goodall and Richard Moore regarding diffusion tube results, annualisation and adjustment and background levels to be used in the ADMS dispersion model.</p>
March 2020	<p>Email exchange between Lesley Goodall and Richard Moore in relation to verification of the ADMS model. Mr Moore advised that he had no issues with the data provided.</p>

Significance Criteria

12.3.14 This section of the chapter describes the methodology which has been used to assess the significance of effects on local air quality. The significance of likely effects arising from the construction and operation of the Proposed Development on air quality has been determined by identifying the magnitude of the impact and the sensitivity of the receptor.

Significance Criteria - Construction Dust

12.3.15 The IAQM methodology within the document “*Assessment of Dust from Demolition and Construction*” (Ref 12.13) has been used for assessing dust from construction activities. The assessment procedure is divided into four steps and construction activities were divided into four types, as follows:

- Demolition;
- Earthworks;
- Construction; and
- ‘Trackout’ of material onto local roads.

12.3.16 At step one the need for a detailed assessment is screened. An assessment is normally required where there are human receptors within 350m of the site boundary and/or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s). Ecological receptors within 50m of the site boundary or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s), are also identified at this stage.

12.3.17 In step two, the Proposed Development site is allocated to a risk category on the basis of the scale and nature of the works (Step 2A) and the sensitivity of the area to dust impacts (Step 2B). These two factors are combined in Step 2C to determine the risk of dust impacts before the implementation of mitigation measures. The assigned risk categories may be different for each of the construction activities outlined by the IAQM (construction, demolition, earthworks and trackout).

12.3.18 Step three of the assessment identifies appropriate site-specific mitigation. These measures will be related to whether the site is a low, medium or high risk site.

12.3.19 At step four the significance of residual effects is assessed. The aim is to prevent significant effects on receptors through the use of effective mitigation.

12.3.20 The risk category is determined by combining a number of criteria including dust emission magnitude, sensitivity of receptors, sensitivity of the area to dust soiling, sensitivity of the area to human health effects which are described below. **Table 12.2** provides the criteria used in the determination of dust emission magnitude.

Table 12.2 - Dust Emission Magnitude

Activity	Criteria used to Determine Dust Emission Magnitude		
	Small	Medium	Large
Demolition	Total building volume <20,000 m ³ , construction materials with low potential for dust release.	Total building volume 20,000 m ³ – 50,000 m ³ , potential dusty construction material.	Total building volume >50,000 m ³ , potentially dusty construction material.
Earthworks	Total site area <2,500 m ² , soil type with large grain	Total site area 2,500 – 10,000 m ² , moderately dusty soil type	Total site area >10,000 m ² , potentially dusty soil type
Construction	Total building volume <25,000 m ³ .	Total building volume 25,000 – 100,000 m ³ .	Total building volume >100,000 m ³ .
Trackout	<10 outward HDV trips in any one day. Unpaved road length <50 m.	10-50 outward HDV trips in any one day. Unpaved road length 50-100 m.	>50 outward HDV trips in any one day. Unpaved road length >100 m.

12.3.21 Criteria to identify the sensitivity of receptors and the surrounding area are provided in the IAQM guidance (Ref 12.13), as shown in **Table 12.3**, and have been used within the assessment.

Table 12.3 - Sensitivity of Receptors

Sensitivity of Receptor	Criteria for Determining Sensitivity		
	Dust Soiling Effects	Health Effects of PM ₁₀	Ecological Sites
High	Dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms	Residential properties, hospitals, schools and residential care homes	International or national designation <i>and</i> the features may be affected by dust soiling
Medium	Parks, places of work	Office and shop workers not occupationally exposed to PM ₁₀	Presence of an important plant species where dust sensitivity is uncertain or locations with a national designation with features that may be affected by dust deposition
Low	Playing fields, farmland, footpaths, short-term car parks and roads	Public footpaths, playing fields, parks and shopping streets	Local designation where features may be affected by dust deposition

12.3.22 **Table 12.2** and **Table 12.3** were then used to define the sensitivity of the area to dust soiling and human health effects. This has been derived for each of construction, demolition, earthworks and trackout. **Table 12.4** and **Table 12.5** provide the criteria used to define the sensitivity of the area to dust soiling and human health impacts.

Table 12.4 - Sensitivity of the Area to Dust Soiling Effects on People and Property.

Receptor Sensitivity	Number of Receptors	Distance from Source (m)*			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

**distances considered are to the dust source*

Table 12.5 - Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM ₁₀ Concentrations	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32 µg/m ³	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m ³	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m ³	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m ³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32 µg/m ³	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low

Receptor Sensitivity	Annual Mean PM ₁₀ Concentrations	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
	28-32 µg/m ³	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

12.3.23 The dust emission magnitude from **Table 12.2** and sensitivity of the area and receptors (shown in **Tables 12.3, 12.4** and **12.5**) were combined, and the risk of impacts from each activity (demolition, earthworks, construction and trackout) before mitigation is applied, determined using the criteria detailed in **Tables 12.6** to **12.9**.

Table 12.6 - Risk of Dust Impacts- Demolition

Potential Impact Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 12.7 - Risk of Dust Impacts- Earthworks

Potential Impact Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 12.8 - Risk of Dust Impacts- Construction

Potential Impact Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 12.9 - Risk of Dust Impacts- Trackout

Potential Impact Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

12.3.24 **Medium** and **High Risk** activities are defined as **significant** impacts within this assessment.

Road Traffic Emissions – Air Quality Objectives

12.3.25 The current air quality standards and objectives are presented in Table 12.10. Pollutant standards relate to ambient pollutant concentrations in air, set on the basis of medical and scientific evidence of how each pollutant affects human health. Pollutant objectives, however, incorporate target dates and averaging periods which take into account economic considerations, practicability and technical feasibility.

Table 12.10: Air Quality Strategy Objectives (England) for the Purposes of Local Air Quality Management

Pollutant	Air Quality Objective		To be Achieved by
	Concentration	Measured As*	
Nitrogen dioxide (NO ₂)	200 µg/m ³	1-hour mean not to be exceeded more than 18 times per year	31/12/2005
	40 µg/m ³	Annual mean	31/12/2005
Particles (PM ₁₀)	50 µg/m ³	24-hour mean not to be exceeded more than 35 per year	31/12/2004
	40 µg/m ³	Annual mean	31/12/2004
Particles (PM _{2.5})	25 µg/m ³	Annual mean (target)	2020
	Work towards reducing annual mean emissions/concentrations of fine particulate matter (PM _{2.5})		

Note: *how the objectives are to be measured is set out in the UK Air Quality (England) Regulations (2000).

12.3.26 Research carried out on Behalf of Defra identified that exceedances of the 1-hour objective of 200 µg/m³ are unlikely to occur where the annual mean is below 60 µg/m³ (Ref 12.9).

12.3.27 The World Health Organisation has set an annual mean guideline value for PM_{2.5} of 10 µg/m³. The UK government have committed to introducing a target that takes the WHO guideline into consideration.

Significance Criteria - Road Traffic Emissions

12.3.28 The impact of road traffic associated with the Proposed Development on local air quality has been assessed using the desk-based computer model Atmospheric Dispersion Modelling System for Roads (ADMS-Roads) v4.1.1.0. The model was used to assess the local air quality impact of development-generated vehicle exhaust emissions, on concentrations of NO₂, PM₁₀ and PM_{2.5}, at selected existing receptors located adjacent to the assessed road network. The location of selected receptors is shown in **ES Volume 9: Figure AQ9**.

12.3.29 ADMS-Roads is a comprehensive tool for investigating air pollution in relation to road networks. The model uses algorithms for the height-dependence of wind speed, turbulence and stability to produce improved predictions. It can predict long-term and short-term concentrations, as well as calculations of percentile concentrations.

12.3.30 ADMS-Roads has been comprehensively validated in a large number of studies by the software manufacturer CERC (Cambridge Environmental Research Consultants). This includes comparisons with data from the UK's Automatic Urban Network (AUN) and specific validation exercises using

standard field, laboratory and numerical data sets. CERC is also involved in European programmes on model harmonisation, and their models have been compared favourably against other EU and US EPA systems.

12.3.31 The technical approach to the modelling was in accordance with the DEFRA publication LAQMTG16 (Ref 12.9). The technical inputs into the model are described in **ES Volume 9: Appendix AQ4**.

12.3.32 The magnitude of effect was calculated at individual receptor locations according to the criteria within the IAQM guidance Land Use Planning and Development Control: Planning for Air Quality (Ref 12.14) as shown in **Table 12.10** which bands the change in concentration of the pollutant to the Air Quality Assessment Level into the following bands; ≤ 1 ; 2-5; 6-10 and >10 %.

Table 12.10 - Magnitude of Effect

Level of Magnitude - % change in concentration relative to the air quality assessment level	Definition of Magnitude
≤ 1	Negligible
2-5	Low
6-10	Moderate
>10	High

12.3.33 The sensitivity of individual receptors is reflected in **Table 12.11** below where impact descriptors increase or decrease in magnitude when compared to long term average concentrations in the assessment year.

Table 12.11 - Sensitivity of Receptor

Long term average Concentration at receptor in assessment year	Sensitivity of Receptor
75% or less of AQAL	Negligible
76-94% of AQAL	Low
95-102% of AQAL	Moderate
103-109% of AQAL	High

12.3.34 The IAQM guidance (Ref 12.14) provides impact descriptors for individual receptors which take into account the impact magnitude (**Table 12.10**) and the sensitivity of the receiving environment and receptors (**Table 12.11**). The impact descriptors are shown in **Table 12.11**. These impact descriptors will inform the assessment of the overall significance of effect as shown in **Table 12.12**.

Table 12.12 - Impact descriptors for individual receptors

Long term average Concentration at receptor in assessment year (Sensitivity of Receptor)	% Change in concentration relative to Air Quality Assessment Level (AQAL)* (Magnitude of effect)			
	≤1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

*AQAL = Air Quality Assessment Level, which may be an air quality objective, EU limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)'

12.3.35 A positive percentage change in concentration relative to the Air Quality Assessment Level is described as Adverse. A negative percentage change in concentration relative to the Air Quality Assessment Level is described as Beneficial.

12.3.36 The IAQM guidance (Ref 12.14) advises that the overall assessment of significance is to be based on professional judgement. Overall significance of impacts has been determined using professional judgement taking into account such factors as:

- impact descriptors for individual receptors;
- the existing and future air quality in the absence of the Proposed Development;
- the extent of current and future population exposure to the impacts; and
- the influence and validity of any assumptions adopted when undertaking the prediction of impacts.

12.3.37 In this case, after considering the individual receptors, and following IAQM guidance (Ref 12.14), professional judgement has been used to assess the overall air quality impact of the Proposed Development which has been described as either: negligible, slight, moderate, or substantial. Any effect described as **moderate** or **substantial** is considered a “**significant**” effect.

Duration of Effect

12.3.38 The duration of effects are reported as short term (0-5 years), medium term (5-15 years) or long term (over 15 years).

Mitigation Measures Methodology

12.3.39 The identification of mitigation measures has been undertaken having regard to;

- typical construction dust mitigation measures as detailed in IAQM guidance (Ref 12.13);
- mitigation measures set out in IAQM guidance for development (Ref 12.14); and
- mitigation measures within the WBC SPD document (Ref 12.8).

Residual Effects Methodology

12.3.40 Residual effects of the Proposed Development have been identified and assessed using professional judgment taking into account factors such as;

- the existing and future air quality in the absence of the development;
- the extent of current and future population exposure to the impacts; and
- the influence and validity of any assumptions adopted when undertaking the prediction of impacts.

Limitations and Assumptions

12.3.41 The assessment is based on the design and operational details available at the time of preparing the ES.

12.3.42 There are a number of limitations and uncertainties associated with modelling of air quality and, where applicable, realistic worst-case scenarios have been assumed (based on professional judgement):

- Modelling simplifies real-world processes into a series of algorithms. For example, it has been assumed that wind conditions measured at Rostherne during the period October 2018 to September 2019 (the period used for verification of the ADMS model) were representative of wind conditions at the Proposed Development Site. This meteorological station is that requested for inclusion by WBC and is the closest station to the site where the required meteorological data for predicting air quality impacts of the Proposed Development are measured on a routine basis. Furthermore, it has been assumed that the subsequent dispersion of emitted pollutants will conform to a Gaussian distribution over flat terrain in order to simplify the real-world dilution and dispersion conditions;
- There is an element of uncertainty in all measured and modelled data used within ADMS; and
- Regarding the aspects of the assessment which do not rely on detailed dispersion modelling, the conclusions of the assessment are reliant on the professional judgement of the consultants involved and the validity of the guidance and tools utilised.

12.3.43 All values presented in this chapter are the best possible estimates using professional judgement. To minimise uncertainty a realistic worst-case approach has been taken whereby;

- In relation to the construction phase dust assessment, all activities were considered to be located close to the boundary of the Proposed Development. In reality, there will be long periods of time when activities are in excess of 350 m from sensitive receptors;

- Within the road traffic assessment;
 - Vehicle emission factors were held at 2019 levels for all assessment scenarios which is unlikely;
 - Background levels of NO₂, PM₁₀ and PM_{2.5} were held at 2019 levels for all assessment scenarios which is unlikely;
 - Modelling has been completed as if the development will be completed and fully occupied (operational) in 2022 which will not be the case. Full build-out will not be completed for approximately 10 years ie circa 2029, by which time background levels of NO₂, PM₁₀ and PM_{2.5} and vehicle emission will almost certainly be lower than in 2019.

12.4 Baseline Conditions

12.4.1 This section of the ES describes the baseline conditions for 2019 which were obtained at the time of assessment. It then goes on to describe the baseline conditions predicted if the Proposed Development were completed and fully occupied by 2022.

Baseline Conditions 2019

12.4.2 The Proposed Development is partially located within an AQMA, known as the Motorway AQMA. The AQMA was designated in 2001 in relation to breaches of the annual mean NO₂ air quality objective along and adjacent to the M62, M6 and M56 motorways. The Proposed Development is also close to a second AQMA, Warrington AQMA, declared in 2016, also in relation to breaches of the annual mean NO₂ air quality objective. This AQMA is focussed around the town centre and the major arterial routes through and around Warrington, including the A59 which runs south from the M62 motorway to the west to the Proposed Development Site. Road traffic associated with the Proposed Development is likely to travel through these AQMAs. The location of these AQMAs and their relationship to the Proposed Development is shown in **ES Volume 9: Figure AQ10**.

Defra Background Maps

12.4.3 The background maps provided by Defra (Ref 12.10) provide predicted background concentrations for NO_x, NO₂, PM₁₀ and PM_{2.5}, and the values for 2018 (the most recent year with available monitoring data to compare against) are shown in **Table 12.13**.

Table 12.13 - Defra Background Levels of Pollutants

OS Grid Reference	2018			
	NO _x (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
359500, 389500	21.40	15.11	11.36	7.91
359500, 390500	27.70	18.69	11.21	7.81
359500, 391500	27.90	19.13	12.69	8.30
359500, 392500	18.95	13.64	11.14	7.27
359500, 393500	16.79	12.23	11.66	7.29
360500, 389500	25.21	17.40	11.98	8.37
360500, 390500	26.92	18.42	12.02	8.25
360500,391500	31.94	21.48	13.30	8.80
360500, 392500	22.80	16.09	11.77	7.77
360500, 393500	18.27	13.22	11.67	7.42
361500, 389500	23.73	16.54	12.13	8.62
361500,390500	23.54	16.46	11.81	8.29
361500,391500	25.89	17.97	12.78	8.56
362500,392500	24.65	17.26	13.59	8.43
362500, 393500	27.84	19.24	13.43	8.29

12.4.4 It can be seen that the Defra predicted NO₂, PM₁₀ and PM_{2.5} background levels are well below the annual mean objectives for NO₂, PM₁₀ and below the World Health Organisation annual mean guideline of 10 µg/m³ for PM_{2.5}. These predicted levels are averaged across 1km grid squares and so there will be some locations within each particular square kilometre where concentrations are higher and some locations where they are lower than predicted, depending on proximity to sources such as road traffic.

Local Authority NO₂ Monitoring

- 12.4.5 The locations of the automatic monitoring station and diffusion tubes used by WBC to monitor NO₂ close to the Proposed Development Site are shown in **ES Volume 9: Figure 12.3**. The results from these sites for the calendar years 2014 to 2018 are shown below in **Table 12.14** and **Table 12.15**. The verification values shown in **Table 12.15** are the bias adjusted monthly diffusion tube results from October 2018 to September 2019 provided by Richard Moore at WMBC and provided within an excel spreadsheet (Ref 12.17).

Table 12.14 - Local Authority Annual Mean NO₂ Results - Automatic Monitoring Station

Site ID	Type of site	OS Grid reference	Level of nitrogen dioxide (µg/m ³)			
			2015	2016	2017	2018
CM1 Selby Street	Urban Background	359151, 388218	24.4	25	21	21.4

**the annual air quality objective for NO₂ is 40 µg/m³*

Table 12.15 - Local Authority Annual Mean NO₂ Results – Diffusion Tubes

Site ID	Type of site	OS Grid reference	Level of nitrogen dioxide (µg/m ³)				Verification values 2018-19
			2015	2016	2017	2018	
WA123 M62 Radley Lane	Roadside	361655, 391914	-	-	-	29.7	25.0
WA95 Winwick Road 1	Roadside	360598, 389820	39.5	39.9	34.7	32.6	32.1
WA96 Winwick Road 2	Roadside	360484, 390416	47.2	50	44.2	40.3	39.3
WA112 Winwick Road 3	Roadside	360434, 390968	52	55	49.3	43.9	41.9

**is 40 µg/m³*

- 12.4.6 Monitoring by WBC indicates that annual average levels of NO₂ were all above or very close to the annual average objective for NO₂ at all of the monitoring locations on the A49 Winwick Road in 2015. Since then, concentrations on Winwick Road appear to be reducing and in 2018 DT44 remained above the objective but DT42 was below the objective and DT43 just above. The results used for verification of the ADMS model (calculated from monitoring results for October 2018 to September 2019) indicate that this trend is continuing, with only DT44 above the objective. The 2019 ASR (Ref 12.15) notes that the presence of the Warrington Intelligent Transport System along the A49 Winwick Road in 2018 and

that initial results show improvements in traffic flows and reduced journey time. This may be now being reflected in air pollutant concentrations close to the road network.

Applicant NO₂ Monitoring

- 12.4.7 The locations of diffusion tubes used by the applicant to monitor NO₂ close to the Proposed Development Site are shown in **ES Volume 9: Figure 12.3**. The results from these diffusion tubes are shown below in **Table 12.16** along with the unadjusted averages for the whole of the monitoring period. The monitoring results for February 2019 to September 2019 have been annualised and bias-adjusted using the local bias adjustment factor provided by WMBC to provide concentrations for use in verification of the ADMS model. The resulting values are also shown in **Table 12.16**. The calculations in relation to the verification values are shown in **ES Volume 9 Appendix AQ2**.

Table 12.16 Applicant's Monthly NO₂ Results – Diffusion Tubes

Site ID	OS Grid reference	Level of nitrogen dioxide (µg/m³)														Verification Values
		2019												2020		
		Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Average		
MG1	362078, 392005	35.14	39.25	33.92	33.46	17.87	26.84	-	33.71	37.15	39.66	31.73	40.35	33.55	33.00	
MG2	361773, 391849	32.7	30.45	31.89	-	23.89	20.5	-	23.21	18.69	27.36	25.52	31.73	26.59	28.22	
MG3	362383, 391634	38.65	25.03	32.11	25.05	26.23	20.59	-	28.75	20.12	39.31	32.79	33.92	29.32	29.44	
MG4	361211, 391320	32.16	24.91	24.13	16.50	22.65	20.55	-	25.95	33.76	35.46	30.46	34.21	27.34	25.01	
MG5	360660, 391642	34.28	31.47	28.28	18.99	23.96	22.75	-	31.35	33.54	35.56	32.4	38.05	30.06	28.62	
MG6	360574, 391726	28.13	17.77	23.01	20.24	19.53	20.36	-	-	29.4	31	26.88	33.92	25.02	21.92	
MG7	360531, 391887	32.54	41.89	31.65	28.23	31.43	28.29	-	34.01	37.37	38.1	35.34	-	33.88	34.18	

Local Authority PM₁₀ and PM_{2.5} Monitoring

12.4.8 The location of the automatic monitoring station used by WBC to monitor PM₁₀ and PM_{2.5} is also shown in **ES Volume 9: Figure AQ8**. The results from the site for the calendar years 2015 to 2018 are shown in **Table 12.17** and **Table 12.18**.

Table 12.17 - Local Authority Annual Mean PM₁₀ Results

Site ID	Type of site	OS Grid reference	Level of PM ₁₀ (µg/m ³)			
			2015	2016	2017	2018
CM1 Selby Street	Urban Background	359151, 388218	15	16	12	13**

**the annual air quality objective for PM₁₀ is 40 µg/m³*

*** seasonally corrected due to poor data capture (69.8%)*

12.4.9 Monitoring by WBC indicates that annual average levels of PM₁₀ are well below the relevant annual air quality objective and the 2019 ASR (Ref 12.15) states that, since 2009, concentrations of PM₁₀ have been reducing at this site.

Table 12.18 - Local Authority Annual Mean PM_{2.5} Results . Automatic Monitoring Station

Site ID	Type of site	OS Grid reference	Level of PM ₁₀ (µg/m ³)			
			2015	2016	2017	2018
CM1 Selby Street	Urban Background	359151, 388218	11	11	10	9

**WHO annual mean guideline is 10 µg/m³*

12.4.10 Monitoring by WBC indicates that the proposed target level of 25 µg/m³ by 2020 is being met at the monitoring site but the concentration remains close to the guideline level of 10 µg/m³ recommended by the World Health Organisation.

Summary of Existing Baseline Conditions

12.4.11 Baseline conditions in relation to NO₂ show that annual average levels of the pollutant are high close to busy roadside locations such as the A49. Concentrations of NO₂ are reducing along the A49 but remain close to, and in some areas above, the annual mean objective in some areas. In less trafficked locations concentrations of NO₂ are below the annual mean objective for NO₂.

12.4.12 Annual average levels of PM₁₀ and PM_{2.5} are well below the relevant annual air quality objective at the roadside site located at Selby Street. There is no indication of any breaches of the annual mean objective for PM₁₀.

12.4.13 In agreement with WBC, average annual levels of NO₂, PM₁₀ and PM_{2.5} for the period October 2018 to September 2019 from the WBC automatic monitoring site at Selby Street have been utilised as background levels within this assessment.

Future Baseline Conditions – Operational Phase (2022)

12.4.14 ADMS has been used to estimate baseline annual NO₂, PM₁₀ and PM_{2.5} concentrations in 2022.

12.4.15 If the full Proposed Development was operational in 2022, other committed developments will also be in construction and/or completed and therefore the associated traffic flows form part of the future baseline environment of the Study Area and have been incorporated within the traffic data used within the ADMS model.

12.4.16 **Table 12.19** below shows the results of modelling NO₂, PM₁₀ and PM_{2.5} concentrations at selected existing sensitive receptors for the baseline conditions in 2022. The locations of selected existing receptors are shown in **ES Volume 9: Figure AQ9**.

Table 12.19 - Predicted Baseline NO₂ and PM₁₀ Annual Mean Concentrations (µg/m³) in 2022 at Selected Existing Sensitive Receptor Locations

Receptor ID and Name	NO ₂ (µg/m ³)	2022 PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
R1	37.16	18.51	11.34
R2	34.20	18.33	11.20
R3	36.41	19.59	11.90
R4	24.80	17.49	10.68
R5	24.15	17.23	10.55
R6	23.06	17.17	10.50
R7	24.05	17.34	10.60
R8	25.28	17.48	10.69
R9	25.96	17.47	10.69
R10	28.30	17.73	10.85
R11	24.47	17.29	10.57
R12	25.00	17.43	10.65
R13	25.66	17.52	10.70
R14	26.48	17.85	10.89
R15	26.13	17.76	10.84

Receptor ID and Name	NO ₂ (µg/m ³)	2022 PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
R16	26.01	17.44	10.66
R17	26.70	17.55	10.73
R18	35.39	18.31	11.20
R19	30.46	18.06	11.03
R20	32.55	18.03	11.09
R21	27.97	17.66	10.81
R22	25.17	17.38	10.63
R23	23.28	17.18	10.50
R24	23.18	17.19	10.51

10.4.17 The results in **Table 12.19** indicate that in 2022 without the development, all these existing sensitive receptors are expected to experience annual mean NO₂ and PM₁₀ concentrations below the respective annual mean objectives. PM_{2.5} concentrations are expected to be above the WHO annual mean guideline value at each of the selected receptors.

12.5 Assessment of Effects

12.5.1 This section of the ES presents the assessments of the likely significant environmental effects that are likely to occur during the construction and operational phase of the Proposed Development and draws a conclusion that uses the significance criteria set out within the methodology. It also presents the 'embedded mitigation' which describes how the Proposed Development has been specifically designed to avoid or to minimise the occurrence of adverse environmental impacts and, where appropriate, to deliver a net benefit.

Assessment of Construction Phase Effects – Dust

12.5.2 The site boundary is within 350m of human receptors. In addition, there are human receptors within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance. Therefore, a detailed assessment of the construction phase of the development on residential receptors has been undertaken. Full details of the assessment are provided in **ES Volume 9: Appendix AQ10**, a summary is provided below.

12.5.3 The scale and nature of works onsite were considered to determine the potential dust emission magnitude for demolition, earthworks and trackout activities as outlined in **Table 12.20**.

Table 12.20 - Dust Emission Magnitudes for Each Activity

Activity	Dust Emission Magnitudes	
Demolition	Small	Limited demolition is required
Earthworks	Large	The site area is > 10,000 m ²
Construction	Large	Total building volume is > 10,000 m ³
Trackout	Large	There are likely to be >50 HDV outward movements per day

12.5.4 The sensitivity of the area to dust soiling and human health in each activity is summarised in **Table 12.21**.

Table 12.21 - Outcome of Defining the Sensitivity of the Area

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	High
Human Health	Medium	Medium	Medium	Medium

12.5.5 There are residential dwellings adjacent to the site; the sensitivity of receptors is, therefore, High. A summary of the risks, before mitigation measures are applied, for dust soiling and human health are shown in **Table 12.22**.

Table 12.22 - Risk of Dust Impacts

Potential Impact	Dust Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	High
Human Health	Medium	Medium	Medium	Medium

Assessment of Operational Phase Effects – Road Traffic

12.5.6 Predicted NO₂, PM₁₀ and PM_{2.5} concentrations for the opening year (2022) ‘with development’ scenario for selected receptors are detailed in **Table 12.23**. The locations of selected receptors are shown in **ES Volume 9: Figure AQ9**. Predicted concentrations for ‘without development’ scenario and the predicted change in NO₂ and PM₁₀ concentrations, as a result of the Proposed Development, are also shown for comparison purposes.

12.5.7 Changes in predicted pollutant concentrations between the ‘without development’ scenario and the ‘with development’ scenario for NO₂ and PM₁₀ were compared to the impact descriptors detailed in EPUK and IAQM guidance and contained within **Table 12.12** above.

Table 12.23 - Dispersion Modelling Results and Impact Descriptors for the Opening Year (2022)

Receptor name	Difference in opening year without and with development	Annual average NO2 (µg/m ³)	Significance	Annual average PM10 (µg/m ³)	Significance	Annual average PM2.5 with Development (µg/m ³)
R1	Without Development	37.16	Negligible	18.51	Negligible	11.35
	With Development	37.46		18.54		
	% Change relative to AQAL & (Impact)	0.75(+0.3)		0.06(+0.03)		
	% of AQAL with Development	94		46		
R2	Without Development	34.20	Slight	18.33	Negligible	11.27
	With Development	35.10		18.45		
	% Change relative to AQAL & (Impact)	2.25(+0.9)		0.3(+0.12)		
	% of AQAL with Development	88		46		
R3	Without Development	36.41	Negligible	19.59	Negligible	11.92
	With Development	36.58		19.62		
	% Change relative to AQAL & (Impact)	0.43(+0.17)		0.08(+0.03)		
	% of AQAL with Development	91		49		
R4	Without Development	24.80	Negligible	17.49	Negligible	10.77
	With Development	26.23		17.63		
	% Change relative to AQAL & (Impact)	3.58(+1.43)		0.36(+0.14)		
	% of AQAL with Development	66		44		
R5	Without Development	24.15	Negligible	17.23	Negligible	10.57
	With Development	24.34		17.26		
	% Change relative to AQAL & (Impact)	0.48(+0.19)		0.08(+0.03)		
	% of AQAL with Development	61		43		
R6	Without Development	23.06	Negligible	17.17	Negligible	10.52

Receptor name	Difference in opening year without and with development	Annual average NO2 (µg/m ³)	Significance	Annual average PM10 (µg/m ³)	Significance	Annual average PM2.5 with Development (µg/m ³)
	With Development	23.33		17.21		
	% Change relative to AQAL & (Impact)	0.67(+0.27)		0.1(+0.04)		
	% of AQAL with Development	58		43		
	Without Development	24.05		17.34		
R7	With Development	24.88	Negligible	17.46	Negligible	10.67
	% Change relative to AQAL & (Impact)	2.08(+0.83)		0.28(+0.11)		
	% of AQAL with Development	62		44		
	Without Development	25.28		17.48		
R8	With Development	26.06	Negligible	17.59	Negligible	10.75
	% Change relative to AQAL & (Impact)	1.95(+0.78)		0.26(+0.11)		
	% of AQAL with Development	65		44		
	Without Development	25.96		17.47		
R9	With Development	26.18	Negligible	17.50	Negligible	10.71
	% Change relative to AQAL & (Impact)	0.55(+0.22)		0.08(+0.03)		
	% of AQAL with Development	65		44		
	Without Development	28.30		17.73		
R10	With Development	28.54	Negligible	17.76	Negligible	10.87
	% Change relative to AQAL & (Impact)	0.6(+0.24)		0.08(+0.03)		
	% of AQAL with Development	71		44		
	Without Development	24.47		17.29		
R11	With Development	25.13	Negligible	17.38	Negligible	10.62
	% Change relative to AQAL & (Impact)	1.65(+0.66)		0.24(+0.09)		
	% of AQAL with Development	63		43		
	Without Development	24.47		17.29		

Receptor name	Difference in opening year without and with development	Annual average NO2 (µg/m³)	Significance	Annual average PM10 (µg/m³)	Significance	Annual average PM2.5 with Development (µg/m³)
R12	Without Development	25.00	Negligible	17.43	Negligible	10.77
	With Development	26.43		17.63		
	% Change relative to AQAL & (Impact)	3.58(+1.43)		0.5(+0.2)		
	% of AQAL with Development	66		44		
R13	Without Development	25.66	Negligible	17.52	Negligible	10.79
	With Development	26.75		17.67		
	% Change relative to AQAL & (Impact)	2.73(+1.09)		0.36(+0.15)1		
	% of AQAL with Development	67		44		
R14	Without Development	26.48	Negligible	17.85	Negligible	10.92
	With Development	26.76		17.91		
	% Change relative to AQAL & (Impact)	0.7(+0.28)		0.14(+0.06)		
	% of AQAL with Development	67		45		
R15	Without Development	26.13	Negligible	17.76	Negligible	10.86
	With Development	26.40		17.80		
	% Change relative to AQAL & (Impact)	0.67(+0.27)		0.09(+0.04)		
	% of AQAL with Development	66		45		
R16	Without Development	26.01	Negligible	17.44	Negligible	10.69
	With Development	26.37		17.48		
	% Change relative to AQAL & (Impact)	0.9(+0.36)		0.12(+0.04)		
	% of AQAL with Development	66		44		
R17	Without Development	26.70	Negligible	17.55	Negligible	10.78
	With Development	27.35		17.65		
	% Change relative to AQAL & (Impact)	1.63(+0.65)		0.23(+0.09)		

Receptor name	Difference in opening year without and with development	Annual average NO2 (µg/m ³)	Significance	Annual average PM10 (µg/m ³)	Significance	Annual average PM2.5 with Development (µg/m ³)
	% of AQAL with Development	68		44		
R18	Without Development	35.39	Negligible	18.31	Negligible	11.22
	With Development	35.70		18.3511.03		
	% Change relative to AQAL & (Impact)	0.78(+0.31)		0.1(+0.04)		
	% of AQAL with Development	89		46		
R19	Without Development	30.46	Negligible	18.06	Negligible	11.07
	With Development	30.84		18.11		
	% Change relative to AQAL & (Impact)	0.95(+0.38)		0.13(+0.05)		
	% of AQAL with Development	77		45		
R20	Without Development	32.55	Negligible	18.03	Negligible	11.10
	With Development	32.62		18.04		
	% Change relative to AQAL & (Impact)	0.18(+0.07)		0.02(+0.01)		
	% of AQAL with Development	82		45		
R21	Without Development	27.97	Negligible	17.66	Negligible	10.82
	With Development	28.08		17.67		
	% Change relative to AQAL & (Impact)	0.27(+0.11)		0.03(+0.01)		
	% of AQAL with Development	70		44		
R22	Without Development	25.17	Negligible	17.38	Negligible	10.66
	With Development	25.48		17.43		
	% Change relative to AQAL & (Impact)	0.77(+0.31)		0.12(+0.05)		
	% of AQAL with Development	64		44		
R23	Without Development	23.28	Negligible	17.18	Negligible	10.57
	With Development	24.18		17.30		

Receptor name	Difference in opening year without and with development	Annual average NO2 (µg/m³)	Significance	Annual average PM10 (µg/m³)	Significance	Annual average PM2.5 with Development (µg/m³)
	% Change relative to AQAL & (Impact)	2.25(+0.9)		0.29(+0.12)		
	% of AQAL with Development	60		43		
R24	Without Development	23.18	Negligible	17.19	Negligible	10.55
	With Development	23.70		17.27		
	% Change relative to AQAL & (Impact)	1.3(+0.52)		0.19(+0.07)		
	% of AQAL with Development	59		43		
	AQAL: Annual Mean NO ₂ & PM ₁₀ Air Quality Objective (µg/m³)					

- 12.5.8 The results of the ADMS modelling assessment for road traffic in 2022 indicate that annual mean concentrations of NO₂ and PM₁₀ and would be below the respective annual air quality objectives in 2022, at all of the selected existing sensitive receptor locations within the study area, both 'with' and 'without' the Proposed Development.
- 12.5.9 In accordance with Defra guidance (Ref 12.9), it can be concluded that exceedances of the 1-hour mean objective for NO₂ are unlikely at any of the selected receptors as the predicted annual mean concentrations are less than 60 µg/m³.
- 12.5.10 To further assess the impact of the development, contour plots of pollutant levels in 2022 with and without the full development in place and no fall in background levels or vehicle emissions have been produced. The results of the modelling of these NO₂ concentrations are shown in the contour plots in **ES Volume 9: Figure AQ11** and **ES Volume 9: Figure AQ12**. Concentrations of PM₁₀ are shown in **ES Volume 9: Figure AQ13** and **ES Volume 9: Figure AQ14** respectively. Concentrations of PM_{2.5} across the study area with the full development in place are shown in **ES Volume 9: Figure AQ15**.
- 12.5.11 The contour plots indicate that there are no significant areas of new exposure to levels of NO₂ or PM₁₀ above the relevant air quality objectives. The difference between the "without development" and the "with development" contour plots. pollution concentrations are barely perceptible except at the roundabout junction of Poplars Avenue and Capesthorne Road.
- 12.5.12 The road traffic associated with the development is expected to have a **Negligible** effect on all of the selected receptors except R2 which is predicted to experience a **Slight** effect. Slight effects are not considered to be significant.

Summary

- 12.5.13 When considering the conservative nature of this assessment, the predicted levels of NO₂ and PM₁₀, the magnitude of the impacts and the effect of road traffic associated with the Proposed Development is considered to be **Not Significant** in relation to the annual mean objectives at existing receptor locations.

Assessment of Significant Cumulative Effects

Inter-Project cumulative effects

- 12.5.14 With regard to the consideration of inter-project cumulative effects, regard has been had to the potential for the Proposed Development to give rise to likely effects in combination with the committed developments, shown in **Table 12.24**.

Table 12.24 - Developments Considered within Assessment

Scheme	Planning Application Reference	Description
J9 Retail Park	2016/29425	Full Planning (Major) - Change of use of two existing units to retail (Use Class A1) and installation of mezzanine floors. Detailed consent for the completion of three retail units and the construction of three new retail units (Use Class A1). Works to include associated parking, servicing and access works to Hawleys Lane and A49
Parkside Phase 1	2018/32247	Adjoining Authority Consultation: Outline application (all matters reserved except for access) for the construction of up to 92,900 m2 of employment floorspace (Use Class B8 with ancillary B1(a)) and associated servicing and infrastructure including car parking; vehicle and pedestrian circulation space; alteration of existing access road including works to existing A49 junction; noise mitigation; earthworks to create development platforms and bunds; landscaping including buffers; works to existing spoil heap; creation of drainage features; substations and ecological works
Birchwood Park	2015/26044	Outline planning application: Demolition of some existing buildings and erection of new buildings for a combination of offices (B1); light and general industrial (B1/B2); warehousing development (B8) and ancillary retail/ financial & professional services/ non-residential institutions/ assembly and leisure (A1/A2/D1/D2) floor space.

12.5.15 In particular, the traffic information provided by Highgate Transport Ltd (the Transport consultant for the Proposed Development) takes account of traffic flows associated with these developments and, thus, so does the air quality assessment.

12.5.16 The cumulative effects of construction dust associated with these developments have been considered. IAQM guidance (Ref 12.13) recommends that regular meetings be held with other high-risk construction sites within 500m of the site boundary to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. In particular, the guidance advises that it is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

Intra- project cumulative effects

12.5.17 The impacts of traffic associated with the Proposed Development have been included within the assessment as a direct impact on air quality. Any impacts of the Proposed Development on ecology in relation to ecological receptors have been considered in the relevant assessments.

12.6 Mitigation of Effects

12.6.1 This section of the ES describes how the significant effects identified in each of the assessment scenarios above will be mitigated to reduce the effect to a not significant level. The mitigation measures are also applicable to not significant adverse impacts as part of good practice management.

Embedded Mitigation

12.6.2 The following measures have been included as integral parts of the design of the Proposed Development;

- Draft travel plan;
- Infrastructure to promote sustainable modes of transport to the Poplars Avenue area such as cycling and walking; and
- A range of highways improvements designed to improve traffic flows. Off-site mitigation measures from the previous public enquiry included improvements to the A50/Hilden Road roundabout and improvements to Sandy Lane West arm of the A49 Cromwell Ave junction. These measures are under review and others are being considered including; parking and traffic calming measures on Poplars Avenue; provision of bus services within the Proposed Development via diversion of existing buses; widening and improvements to the A49 Golborne Road junction. And a contribution to the upgraded MOVA at the A49 / A50 junction.

Construction Phase – Dust Emissions

12.6.3 The construction phase assessments identify the potential dust impact significance of dust emissions associated with the Proposed Development. These impacts are medium term i.e. last five to fifteen years.

12.6.4 Using the methodology described in the IAQM Guidance (Ref 12.13), appropriate site-specific mitigation measures associated with the determined level of risk can be defined. Mitigation measures are divided into general measures applicable to all sites and measures applicable specifically to earthworks, construction and trackout. They are categorised into “highly recommended” and “desirable” measures and are a combination of physical and management measures. These are all measures which will be included within the CEMP for the Proposed Development, which will be prepared and implemented pursuant to a planning condition.

12.6.5 The highly recommended and desirable construction dust mitigation measures arising out of this assessment which will be implemented are detailed in **Table 12.25**.

Table 12.25 Highly Recommended Construction Phase Mitigation Measures

General Measures
Communications
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
Display the head or regional office contact information.
Develop and implement a Dust Management Plan (DMP).
Site management
Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
Make the complaints log available to the local authority when asked.
Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.
Monitoring
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary, with cleaning to be provided if necessary.
Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.
Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
If requested by the Local Authority: Agree dust deposition, dust flux, or real-time PM ₁₀ continuous monitoring locations with the Local Authority; where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.
Preparing and maintaining the site
Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
Avoid site runoff of water or mud.

Keep site fencing, barriers and scaffolding clean using wet methods.

Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.

Cover, seed or fence stockpiles to prevent wind whipping.

Operating vehicle/machinery and sustainable travel

Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable.

Ensure all vehicles switch off engines when stationary - no idling vehicles.

Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable.

Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).

Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.

Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

Operations

Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.

Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.

Use enclosed chutes and conveyors and covered skips.

Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.

Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste management

Avoid bonfires and burning of waste materials.

Demolition Measures

Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).

Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.

Avoid explosive blasting, using appropriate manual or mechanical alternatives.

Bag and remove any biological debris or damp down such material before demolition.

Earthworks

Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.

Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.

Only remove the cover in small areas during work and not all at once.

Construction Measures

Avoid scabbling (roughening of concrete surfaces) if possible.

Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.

Trackout Measures

Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.

Avoid dry sweeping of large areas.

Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.

Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable

Record all inspections of haul routes and any subsequent action in a site log book.

Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.

Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.

Access gates to be located at least 10 m from receptors where possible.

Operational Phase – Road Traffic Emissions

- 12.6.6 The assessment of the impact of emissions from road traffic associated with the Proposed Development predicts no significant impacts on local air quality. It is recognised that national guidance and local authority policies adopted by WBC indicates that mitigation in respect of air quality is required (Ref 12.14 and Ref 12.8). As this is an outline application, these matters can be dealt with at reserved

matters stage but it is anticipated that electric vehicle charging will be provided on-site at communal parking areas and that some homes will also be provided with electric vehicle charging points. The level of this provision is to be agreed with WBC.

12.7 Residual Impacts

- 12.7.1 Significant impacts have been identified in relation to construction dust. However, guidance from the IAQM Assessment of Dust from Demolition and Construction (Ref 12.13) is that, with appropriate mitigation in place, the impacts of construction dust will not be significant. With the recommended mitigation measures in place, the residual effects are considered to be negligible during the construction phase of the Proposed Development, and therefore the residual impact of construction dust is **Not Significant**.
- 12.7.2 No significant impacts associated with road traffic in relation to the operational phase of the Proposed Development have been identified. The residual effects of road traffic associated with the proposed development are, therefore, considered to be negligible.

12.8 Conclusions

- 12.8.1 The potential effects of construction traffic and combustion sources associated with the proposed development have been scoped out of this assessment. The evaluation of key potential impacts has shown that, providing suitable precautions are made in the planning and execution of the construction phase of the development, significant impacts on local air quality can be avoided. The assessment has also shown that any increases in pollutant concentrations as a consequence of road traffic associated with the proposed development will be considered to be “negligible” and therefore would not be considered to be significant.

References

Ref 12.1	European Parliament (1996), <i>Council Directive 96/62/EC on Ambient Air Quality Assessment and Management</i>
Ref 12.2	European Parliament (2008), <i>Council Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe</i>
Ref 12.3	HMSO, (2010) <i>Air Quality Standards Regulations 2010</i>
Ref 12.4	Ministry of Housing, Communities and Local Government (MHCLG), (July 2018) <i>National Planning Policy Framework</i>
Ref 12.5	DCLG, (Updated March 2014) Planning Practice Guidance – Air Quality see: http://planningguidance.communities.gov.uk/blog/guidance/air-quality/
Ref 12.6	WBC (2014) <i>Local Core Strategy Document 2014</i>
Ref 12.7	WBC (February 2018) <i>Air Quality Action Plan 2017-2022</i>
Ref 12.8	WBC (May 2013), Supplementary Planning Document
Ref 12.9	Defra, (2018) <i>Local Air Quality Management Technical Guidance TG(16)</i>
Ref 12.10	Defra (2019) online support tool <i>Background pollution concentrations</i> see: http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html
Ref 12.11	Defra online tool <i>Air Quality Management Areas interactive map</i> see: https://uk-air.defra.gov.uk/aqma/maps
Ref 12.12	Defra NO _x to NO ₂ Calculator https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html#NOxNO2calc
Ref 12.13	IAQM, (2014) <i>Assessment of Dust from Demolition and Construction</i>
Ref 12.14	IAQM, (January 2017) <i>Land Use Planning and Development Control: Planning for Air Quality</i>
Ref 12.15	WBC (September 2019) 2019 Air Quality Annual Status Report
Ref 12.16	WBC Diffusion Tube Monitoring Results Spreadsheet

13.0 SOCIO-ECONOMIC ASSESSMENT

Please note this chapter has been renumbered from volume 8 to allow for inclusion for relevant text from volumes 2 and 5.

3.1 Introduction

13.1.1 This section has been prepared by Lichfields to summarise the impact of the proposed development in social and economic terms.

13.1.2 The assessment principally focuses on the impacts of the development on the local population, supply of housing, provision of education, health and community facilities in the local area. The local employment and labour supply impacts generated by the proposed development are also considered.

13.1.3 The main socio-economic issues covered in this section include the following:

- 1 Extent of the local impact area of the proposed development;
- 2 Prevailing socio-economic and labour market conditions, and provision of open space, sport and recreation facilities, within relevant impact areas;
- 3 Temporary construction employment likely to be generated by the proposed development;
- 4 Direct employment likely to be associated with the proposed development;
- 5 Impacts on the local population and labour market arising from the proposed development;
- 6 Contribution of the scheme to local housing provision; and
- 7 The effect of the development on the provision of open space, sport and recreation facilities, education, health and community facilities within the local impact area.

13.1.4 The proposed development site comprises approximately 69 hectares of open land to the south of the M62. The land has an urban fringe character, and has previously been used for agriculture purposes.

The Location

13.1.5 The site has good links to the strategic highway network, both local and national routes. It has easy access by foot and cycle to nearby facilities such schools, healthcare facilities and sport and recreation venues. It is well placed to take advantage of local bus routes into Warrington town centre and further afield. The two mainline railway stations within the town centre are accessible by bus from within the local area. Local train services are available from Padgate station, approximately 1m from the site, with regular services to Liverpool and Manchester. This topic is addressed in greater detail within Section 9.0 of this report (Transportation and Highways).

13.1.6 Since the preparation of the July 2016 socio-economic chapter of the Environmental Statement [ES] and the subsequent Addendum 1 in January 2018, the scheme has evolved further, and the current description of development suggests a different magnitude of floorspace than was originally modelled. From the current description of development, this Chapter updates the socio-economic impacts where necessary.

13.1.7 The description of development is as follows:

"Major Development: Outline planning application for a new mixed use neighbourhood comprising residential institution (residential care home - Use Class C2); up to 1,200 dwelling houses and apartments (Use Class C3); local centre including food store up to 2000 square metres (Use Class A1); financial & professional services; restaurants and cafes; drinking establishments; hot food takeaways (Use Classes A2-A5 inclusive); units within Use Class D1 (no- residential institution) of up to 600 sq m total with no single unit of more than 200 sqm; and family restaurant/ pub of up to 800 sq m (Use Classes A3/A4); primary school; open space including sports pitches with ancillary facilities; means of access (including the demolition of 344; 346; 348; 458 and 460 Poplars Avenue) and supporting infrastructure."

13.2 Planning Policy

National Planning Policy

13.2.1 The 2019 Framework sets out the Government's economic, environmental and social planning policies for England. The Framework [§7] states that the purpose of the planning system is to contribute to the achievement of sustainable development. It states in paragraph 8 that achieving sustainable development means that the planning system has three over-arching objectives, which are interdependent and need to be pursued in mutually supportive ways: economic, social and environmental. The economic objective is to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure. Paragraph 11 requires plans to positively seek opportunities to meet the development needs of their area and be sufficiently flexible to adapt to rapid change.

13.2.2 The widely-cited line that the planning system should do, "*everything it can to support sustainable economic growth*" has been removed from the 2019 version of the Framework, but the general direction remains clear:

"Significant weight should be placed on the need to support economic growth and productivity, taking into account local business needs and wider opportunities for development." [§80]

- 13.2.3 The revised Framework prioritises the delivery of new homes in order to address the current national housing crisis:

“To support the Government’s objective of significantly boosting the supply of homes, it is important that a sufficient amount and variety of land can come forward where it is needed, that the needs of groups with specific housing requirements are addressed and that land with permission is developed without unnecessary delay.” [§59]

Warrington Core Strategy

- 13.2.4 The Warrington Core Strategy, adopted in July 2014, sets out the Council’s vision, aims and strategy for the Borough, including the overarching planning policies that will guide growth during the period to 2027. However, in February 2015 the High Court²⁴ quashed parts of the Warrington Local Plan Core Strategy, specifically:

- 1 Policy W1 and Policy CS2, and specifically to “delivering sufficient land for housing to accommodate an annual average of 500 dwellings (net of clearance) between 2006 and March 2027, and a minimum of 10,500 over the whole period”²⁵; and,
- 2 Paragraph 6.38 relating to the delivery of “1,100 new homes as a sustainable urban extension to West Warrington.”

- 13.2.5 The Council is currently reviewing its Objectively Assessed Need for Housing as a result of this decision. All other policies within the plan remain unaltered. The following policies are relevant to the socio-economic assessment:

- 1 Core Strategy Policy CS1 promotes and encourages development proposals that are sustainable and accord with national and local planning policy frameworks;
- 2 Core Strategy Policy CS2 identifies up to 277 ha of employment land to support the growth of the local and sub-regional economy;
- 3 Core Strategy Policy CS9 identifies Inner Warrington as a strategic location which could accommodate housing growth in the longer term to avoid the need to release Green Belt land for development;
- 4 Core Strategy Policy PV3 supports developments which assist in strengthening the boroughs workforce and enhance training opportunities for its residents. It specifically seeks to secure local employment opportunities associated with the construction and subsequent operation of new development;

²⁴ [2015] EWHC 370 (Admin)

²⁵ High Court Judgement Order, Appendix (Available online at: https://www.warrington.gov.uk/download/downloads/id/8613/local_core_plan_strategy_court_order_feb_2015.pdf)

- 5 Core Strategy Policy SN1 sets out the distribution and nature of new housing across Warrington Borough;
- 6 Core Strategy Policy SN2 requires a mixture of housing types and tenures to be provided through the delivery of new homes in order to help secure mixed and inclusive neighbourhoods;
- 7 Core Strategy Policy SN4 states that provision for retailing within the Borough will be based on the need to safeguard and enhance the vitality and viability of a hierarchy of centres;
- 8 Core Strategy Policy SN 5 directs retail and leisure uses towards District, Neighbourhood and Local Centres where the development is of a scale and nature appropriate to the area served by the centre;
- 9 Core Strategy Policy SN 6 seeks to assist the continued viability and growth of the local economy and support the sustainability of local communities;
- 10 Core Strategy Policy SN 7 seeks to ensure that planning helps to promote healthy lifestyles across all of the Borough's communities;
- 11 Core Strategy Policy QE3 encourages partners to develop and adopt an integrated approach to the provision, care and management of the borough's Green Infrastructure;
- 12 Core Strategy Policy MP10 aims to ensure that Warrington's future growth is supported and enhanced through the timely delivery of necessary transport, utility, social and environmental infrastructure required to support strategic and site specific proposals as set out in the Infrastructure Delivery Plan.

13.2.6 As part of the formulation of the evidence base for the new Local Plan, the Council has reviewed its LHN using the standard methodology and alternative, employment-led, approaches.

13.2.7 Following consultation on the Draft Local Plan (Proposed Submission Version) in 2019, the Council is currently reviewing the responses and carrying out additional work to respond to the issues raised. According to the Council's website, submission of the Warrington Local Plan for its examination will be delayed until later in 2020, although given the number of representations made on the Draft Local Plan it is considered that this timeframe remains challenging and an Examination in Spring 2021 is more likely.

13.3 Assessment Methodology & Significance Criteria

13.3.1 The purpose of this sub-section of the Environmental Statement [ES] is to set out the significant socio-economic effects of the Peel Hall development that could occur during the development's construction and operation.

Assessment Criteria

- 13.3.2 The assessment first establishes the development's area of impact, defining the baseline position of the impact area in terms of its economic and labour market conditions, before examining the potential impacts of the various elements of the proposed development. Opportunities for the mitigation of any adverse effects, and the enhancement of positive effects, are then examined, taking into consideration any built-in mitigation elements of the scheme (e.g. social infrastructure facilities).
- 13.3.3 An assessment will be made of both direct employment associated with the scheme and likely indirect employment generation. The implications of the employment provided on the site for the economic and social well-being of the area will be assessed in the context of the ES.

Sources of Information

- 13.3.4 This assessment draws upon published Government and local authority statistics and economic strategy documents relating to the area. The latest available data from the 2011 Census, the Business Register Employment Survey [BRES], the Annual Population Survey [APS] and other published national statistics have been used. At a local level consideration has been given to the Warrington Core Strategy (2014) alongside the Peel Hall Masterplan.
- 13.3.5 As well as these data sets, existing data sources have been drawn on, alongside discussions with planning officials. These sets include the following:
- Warrington Borough Council for education;
 - NHS Choices for healthcare;
 - Warrington Borough Council's evidence base for community facilities; and,
 - Sport England for sports facilities.

Estimating Additional Effects

- 13.3.6 It is important to recognise that not all of the employment, housing, retail and other impacts of the proposed development will necessarily be additional to the local economy. In this case consideration has been given to a combination of supplier related effects (additional jobs generated by local firms that provide goods and services to the construction of Peel Hall) and income multipliers (additional rounds of spending generated by those employed at Peel Hall). Employment multipliers for this assessment are based on the HCA Additionality Guide, Fourth Edition 2014 and those used for similar facilities elsewhere, taking account of local economic conditions.

- 13.3.7 Following the derivation of the gross direct employment figures for the proposed development, the net additional employment impacts of the scheme are estimated taking account of these factors.

Significance Criteria

- 13.3.8 In the absence of any generally accepted criteria for assessing the significance of socio-economic impact, the scale of any impacts is assessed in relation to the magnitude of change against the sensitivity of the baseline position. In some case this cannot be quantified or measured, so the nature and context of the impact is considered more generally. Impacts are identified as either positive (beneficial) or negative (adverse).
- 13.3.9 Essentially, the significance of socio-economic impacts results from the inter-play between two factors: the sensitivity of the receptor, and the magnitude of the effect.
- 13.3.10 In terms of the sensitivity of the receptor receiving the environmental change/effect, these have been defined on the basis of high, medium, low or negligible, depending upon the nature of that receptor. The sensitivity will be determined by a number of factors, for example the size of the local resident population, its proximity to the effect; its value and/or its importance. This includes the following considerations:
- a High – high importance and/or rarity, in close proximity to the impact with very limited potential for avoidance/substitution;
 - b Medium – medium importance or scale, some potential for avoidance/substitution;
 - c Low – low importance and at a more localised scale, opportunities to avoid/substitute;
 - d Negligible – very low importance and generally insensitive to the impact in question.
- 13.3.11 In terms of the second factor, whilst there will remain an element of subjectivity given the nature of the assessment, in general the magnitude has been defined on the basis of the following considerations:
- a Major – very significant, large scale effects on matters of acknowledged importance;
 - b Moderate – significant, minor effects on matters of acknowledged importance, or more large scale effects on matters of local importance;
 - c Minor – slight impact, barely perceivable effects on matters of acknowledged importance or minor effects on matters of local importance;
 - d Negligible – very slight impact, effects of insignificance or not perceivable.

Table 13.21 Matrix for Determining the Significance of Impacts

		Sensitivity of Receptor/Receiving Environment to Change/Effect			
		High	Medium	Low	Negligible
Magnitude of Change/Effect	High	Major	Moderate to Major	Minor to Moderate	Negligible
	Medium	Moderate to Major	Moderate	Minor	Negligible
	Low	Minor to Negligible	Minor	Negligible to Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

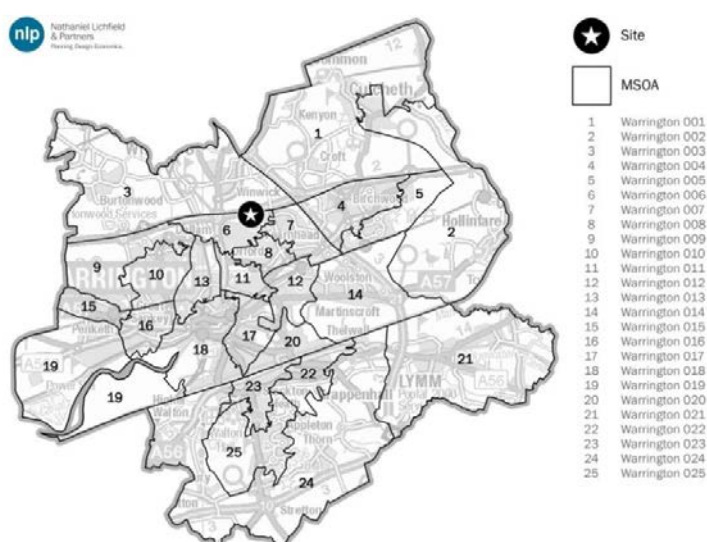
Cumulative Impacts

- 13.3.12 The applicant considers that there are no other local schemes which have the potential to create cumulative socio-economic impacts. The only other notable scheme is the residential development proposed at Omega, which is too remote from the Peel Hall site to be of significance from a socio-economic perspective.

Area of Impact

- 13.3.13 The proposed development is located in Warrington's Middle Layer Super Output Area (MSOA) #006, towards the north of Warrington Borough. **Error! Reference source not found.** maps all of Warrington's MSOAs mapped, along with the position of Peel Hall within MSOA #6.

Figure 13.1 MSOAs within Warrington Borough and the site location of Peel Hall



Source: Lichfields Analysis

13.3.14 Due to prevailing economic linkages and travel-to-work flows, some effects of the proposed development will be distributed beyond the boundaries of this MSOA. In order to see where the main impacts of the development will be focused, the impact area must be defined (i.e. the area where Peel Hall's MSOA draws the majority of its workforce from and where Peel Hall's MSOA residents travel to work). In defining the local impact area for the proposed development, the 2011 Census data on travel-to-work flows for Peel Hall's MSOA was examined. This is shown in Error! Reference source not found. Table 13.2 and 13.3 Error! Reference source not found..

Table 13.22 Place of Employment for Peel Hall's MSOA 006 Residents in Warrington, 2011

Rank	Warrington MSOA	Total	%	Cumulative %
1	018	519	17.6%	17.6%
2	013	237	8.0%	25.7%
3	014	223	7.6%	33.2%
4	004	174	5.9%	39.1%
5	017	167	5.7%	44.8%
6	009	158	5.4%	50.2%
7	006	147	5.0%	55.1%
8	011	123	4.2%	59.3%
9	008	74	2.5%	61.8%
12	010	48	1.6%	63.5%
13	005	43	1.5%	64.9%
14	012	37	1.3%	66.2%
15	007	35	1.2%	67.4%
34	016	9	0.3%	67.7%
Local Impact Area		1,994	67.7%	67.7%

Source: Census 2011 / Lichfields Analysis

Table 13.23 Place of Residence for Peel Hall's MSOA Workers in the Local Impact Area, 2011

Rank	Warrington MSOA	Total	%	Cumulative %
1	006	147	5.4%	5.4%
2	011	102	3.7%	9.1%
3	017	98	3.6%	12.7%
4	008	88	3.2%	15.9%
5	013	76	2.8%	18.7%
7	016	60	2.2%	20.9%
8	018	59	2.2%	23.0%
9	010	55	2.0%	25.0%
10	007	49	1.8%	26.8%
12	020	39	1.4%	28.3%
15	009	34	1.2%	29.5%
16	012	32	1.2%	30.7%
17	014	32	1.2%	31.8%
19	005	31	1.1%	33.0%
38	004	11	0.4%	33.4%
Local Impact Area		913	33.4%	33.4%

Source: Census 2011 / Lichfields Analysis

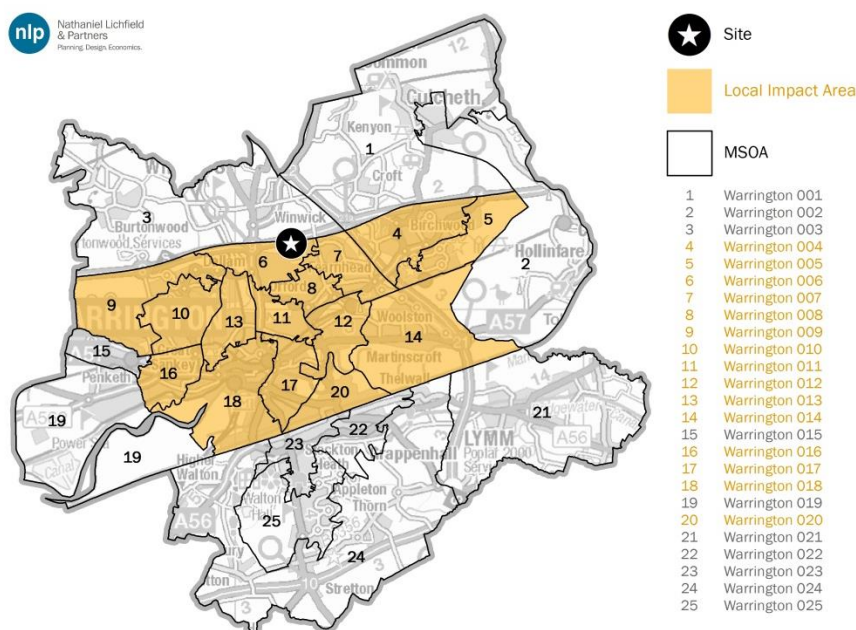
13.3.15 147 (5%) of employed residents in Peel Hall's MSOA both live and work within the MSOA itself. Although a percentage of the MSOA's working residents travel outside of Warrington Borough for work (such as to Halton or St Helens) the majority stay within the Borough. The out-commuting rate of Peel Hall's MSOA (#6) employees in Warrington is 76% (i.e. the 25 MSOAs that constitute Warrington are the place of employment for 76% of all those workers living in MSOA #6), whereas the equivalent in-commuting rate is 42% (nearly half of all those who work in MSOA #6 are from wards within Warrington Borough). Whilst this figure may seem low, the additional commuters not captured in the local impact area are dispersed and as such are unlikely to have a significant impact on any one particular area.

13.3.16 As such the principal labour catchment area, and therefore the local impact area for the proposed development, is identified as the following MSOAs located within Warrington Borough, illustrated in **Error! Reference source not found.:**

- Warrington 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 20

13.3.17 Whilst it may appear at first unusual that either MSOA 1 or 3 are located within the local impact area, this is primarily because these areas, which both lie north of the M62, are not densely developed or urbanised and hence do not provide many jobs or homes for the residents of the local area.

Figure 13.2 Local Impact Area for the Peel Hall development



Source: Lichfields analysis

13.4 Baseline Conditions

Introduction

- 13.4.1 This section sets out the economic context and main socio-economic features of the local area relating to the proposed development site at Peel Hall. This includes a summary of the current socio-economic conditions, and provision of local community infrastructure, within the local area.

Economic Characteristics

Economic, Employment and Labour Market Factors

- 13.4.2 The key economic features and trends within Warrington have been reviewed to provide a context in which any socio-economic impacts of the proposed development can be assessed. This local authority area represents the wider impact area for the scheme in economic terms. The key points of this review are summarised below:
- 13.4.3 The resident population within Warrington Borough grew from 191,080 to 202,228 between the 2001 and 2011 Censuses, equating to a 5.8% rise. This is higher than the regional average (4.8%) but lower than the national average (7.9%). The current population of Warrington is 209,547²⁶. According to the 2016-based Sub-National Population Projections, the population is set to increase to 219,488 by 2027, the end of the adopted Plan period. This equates to an 8.5% increase on the 2011 Census figure.
- 13.4.4 The number of employee jobs in Warrington Borough equated to around 135,100 jobs in 2018, representing an increase of 14.2% since 2009. This rate of increase in employee jobs was greater than both the North West (10.5%) and England & Wales as a whole (12.4%)²⁷.
- 13.4.5 Warrington's job density, (the ratio of total jobs to population aged 16-64, often used as a measure of labour demand), as of 2018 was 1.14, higher than both the regional figure of 0.84 and the national figure of 0.86.
- 13.4.6 The largest sectors of employment in Warrington are: Professional, Scientific and Technical (17.2%); Business administration and Support Services (14.2%); Health (9.7%) and Retail (8.9%). The proportion of workforce jobs attributed to each of these sectors, relative to the North West

²⁶ ONS 2018 Mid-Year Population Estimates (2019)

²⁷ ONS Business Register and Employment Survey [BRES] (2019)

and the UK, is significantly higher in Professional, Scientific and Technical, and Business Administration and Support Services, whilst slightly lower in Health and Retail²⁸.

13.4.7 The number of businesses created in the wider impact area of Warrington Borough increased by 56% between 2010 and 2019, higher than the regional (30%) and national rates of change (31%)²⁹.

13.4.8 Unemployment levels in Warrington, based on the modelled rate derived from the Annual Population Survey, suggest that the Borough's current unemployment rates is 3.4%, which is lower than the regional and national (both 3.9%) levels)³⁰.

13.4.9 The economic activity rate in Warrington Borough (as a percentage of the total population) equated to 79.7% in September 2018. This compares favourably with the economic activity rates of 77.4% across the region and 78.9% across the country as a whole³¹.

13.4.10 The median gross weekly earnings by workplace in Warrington Borough were £549 in 2019, lower than the North West (£550) and the UK (£587) averages. The median gross weekly earnings by residence were slightly higher in the Borough however, at £596, comparing well with both the regional and national averages (£556 and £587 respectively)³².

13.4.11 House price affordability is a key issue in the Borough. The median house price in Warrington (as of 2019) was £180,000, compared to the national average of £239,000. The ratio of median house prices to incomes in Warrington in 2019 is 5.86 – higher than neighbouring authorities of St Helens (5.10), Wigan (5.00) or Halton (5.09), although lower than the national average (7.83)³³.

Deprivation

13.4.12 The English Indices of Deprivation [IMD] 2019 provides a measure of multiple deprivation at the small-area level, based on indicators such as income, employment, health, education and crime. Of the 326 local authorities in England, Warrington is ranked 175th. As can be seen in Figure 13.3, the MSOA in

²⁸ ONS Business Register and Employment Survey [BRES] (2019)

²⁹ ONS UK Business Counts (2019)

³⁰ ONS annual population survey (Oct 2018-Sept 2019)

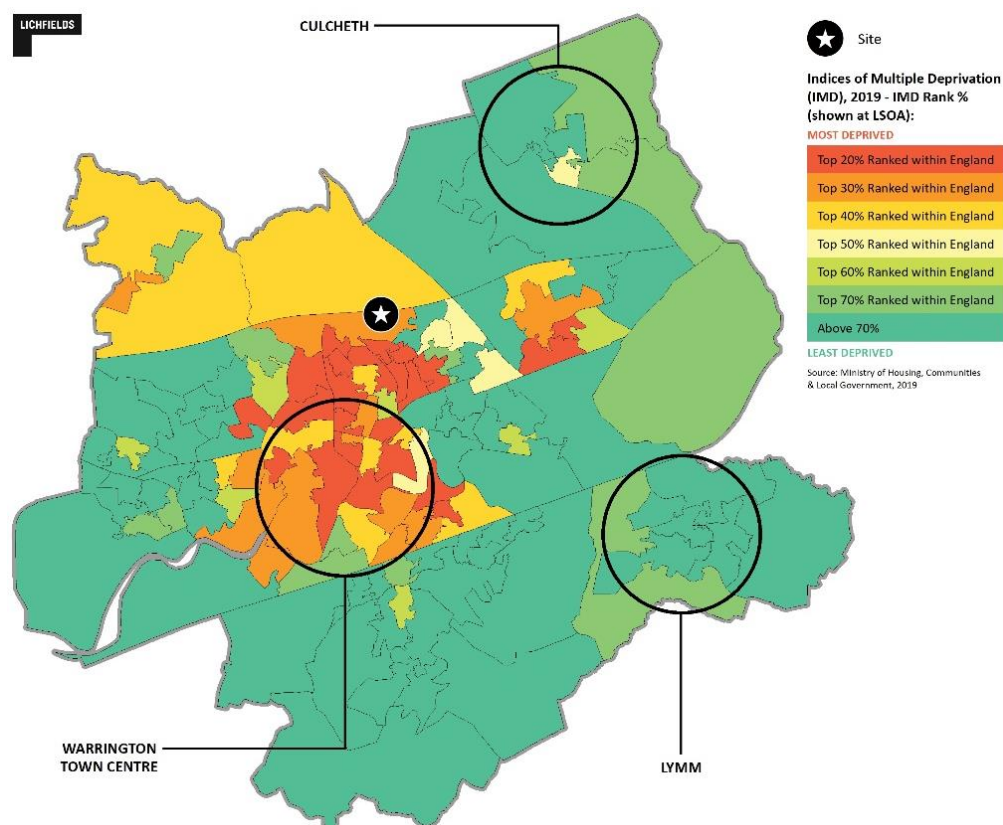
³¹ ONS annual population survey (Oct 2018-Sept 2019)

³² ONS annual survey of hours and earnings 2019

³³ ONS (2019): Ratio of median house price to median gross annual residence-based earnings by country and region, England and Wales, 2002 to 2018

which the Peel Hall site is located is a deprived area, whilst in and around Warrington town centre there are highly deprived areas. Other parts of the local impact area and the Borough as a whole on the other hand, contain some of the least deprived areas in the country.

Figure 13.3 2019 Deprivation Map of Warrington Borough

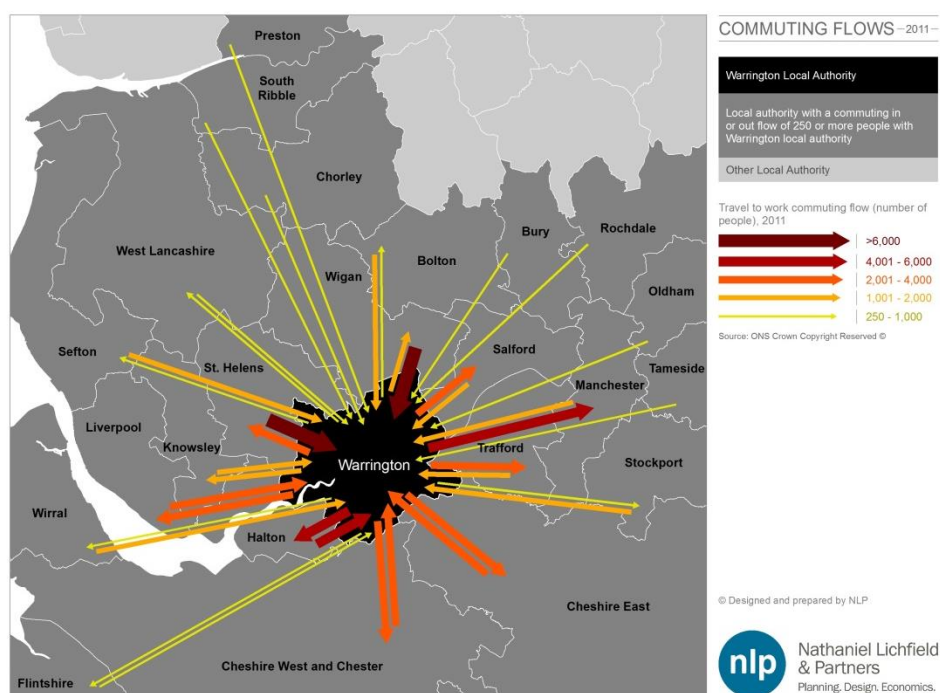


Source: Indices of Multiple Deprivation 2019 / Lichfields analysis

Commuting

13.4.13 Commuting data from the 2011 Census has been analysed (Error! Reference source not found.). Of the 101,235 Warrington residents in employment, 66,242 (65.4%) both work and live in the Borough. This means that 34.6% commute outside of the Borough. It is clear that Warrington has strong economic linkages with Halton in terms of commuting, with over 4,600 people travelling from Warrington to Halton to work and 5,700 commuting in the opposite direction. Further to this Warrington also shows significant in-commuting linkages with St Helens and Wigan, and significant out-commuting linkages with Manchester. With 49,224 inward commuters and 34,993 outward commuters overall the Borough has a net inflow of 14,231 and so is a net importer of labour.

Figure 13.1 Commuting Map for Warrington Borough, 2011



Source: Census 2011 / Lichfields Analysis

Other Socio-Economic Factors

Housing Provision

13.4.14 At the time of the 2011 Census, a total of 87,943 dwellings were located within Warrington Borough.³⁴

The Local Plan Core Strategy for Warrington sets out a target for at least 10,500 new dwellings to be constructed within the Borough between 2006 and 2027³⁵, which is equivalent to an annual average requirement of 500 homes. As mentioned previously, the Core Strategy was the subject of a High Court Decision which resulted in the housing target being rescinded.

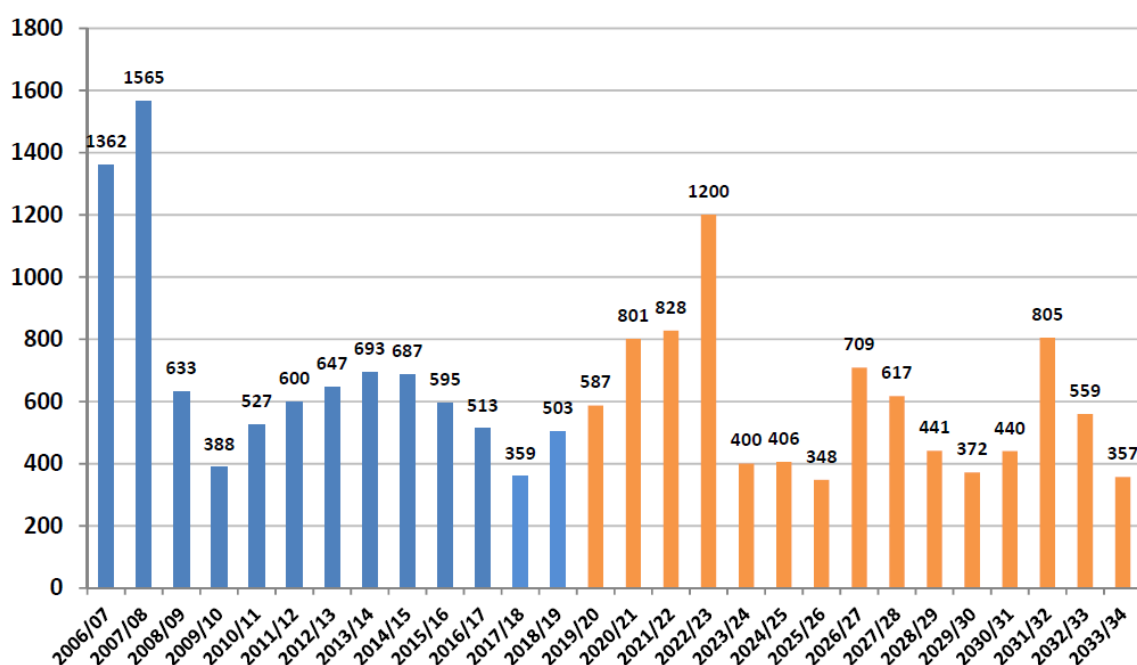
13.4.15 Applying the revised approach to the standard methodology as set out in the updated Framework and PPG would result in a LHN figure of **839 dpa** for Warrington Borough. This represents the minimum number of homes needed per year as set out in paragraph 60 of the revised Framework (February 2019).

³⁴ Census (2011) Question QS418EW

³⁵ Warrington Borough Council (2015) Core Strategy, 9.1

13.4.16 The Council's latest evidence on housing supply is set out in the 2019 Annual Monitoring Report [AMR] (published in February 2020) and the emerging Warrington Local Plan. The 2019 AMR contains extracts from the 2019 Strategic Housing Land Availability Assessment [SHLAA]. The latest detailed long-term housing land supply trajectory is summarised in Figure 13.5. In total, the Council considers that it has a deliverable five-year housing supply of **3,816** homes. This includes a windfall allowance of 380 homes that the Council considers likely to come forward on small sites of 0.25 ha or less, at a rate of 76 dwellings annually. With an LHN of 839 and a 5-year requirement of 5,034 dwellings, the **Council has an under-supply of 1,218 dwellings, and a 5YHLS of 3.79 years**. This very much represents a best-case scenario as Figure 13.5 assumes that all of the Council's sites identified in the 2019 AMR really are deliverable. It is considered that this is very unlikely to be the case.

Figure 13.5: Warrington Borough Housing Land Supply (including Windfall Allowance)



Source: Warrington Borough Council (2019) Annual Monitoring Report

Education Provision

13.4.17 Any development that generates additional housing demand locally may also have an impact on education requirements.

13.4.18 WBC issued a Planning Obligations Supplementary Planning Document [SPD] in January 2017. In this document, WBC states that planning contributions will be sought in connection with proposed housing developments of 11 or more units where the new housing will generate a need that cannot be

met by existing local facilities [paragraph 3.48]. In order to calculate the number of pupils expected to be generated by the proposed development, the Council uses the following child yields [page 18]:

- 1 Primary School child yield – 0.30 pupils per family home (2 bed dwelling and above);
- 2 Secondary School child yield – 0.18 pupils per family home (2 bed dwelling and above).

13.4.19 The degree of shortfall will also be based on the projected position in relation to the supply and demand situation for school places within a reasonable distance of the proposed development in the case of primary school provision, or in relation to schools where the educational needs of any secondary pupils are likely to be met. The Council will consider variation from the child yields where there is compelling evidence to do so, such as where new homes will be restricted for occupation by elderly people³⁶.

13.4.20 When assessing capacity for proposed residential developments the standard radius is 2 miles for primary school level and 3 miles for secondary school level. The Council has confirmed that the planning areas relevant to Peel Hall are, for primary schools, 'Primary Central Warrington' and for secondary schools, 'Secondary Central Warrington'.

School Capacity and Enrolment Forecasts

13.4.21 In August and October 2017 WBC provided Lichfields with up-to-date information on the current and forecast capacities and pupil roll numbers for primary and secondary schools within the planning area relevant to Peel Hall. The capacity of primary schools within Central Warrington, and their forecast enrolment to 2020/21, is summarised in Table 13.4.

Table 13.4 School Capacity – Central Warrington Primary Schools, excluding Peel Hall

Forecasts	2017/18	2018/19	2019/20	2020/21	2021/22
Reception	565	539	558	546	530
Year 1	582	566	540	560	547
Year 2	573	584	567	542	561
Year 3	561	575	585	569	543
Year 4	565	563	576	587	570
Year 5	596	567	564	578	588
Year 6	513	598	568	566	579
TOTAL	3,955	3,992	3,958	3,948	3,918

³⁶Warrington Borough Council (January 2017): Planning Obligations Supplementary Planning Document

Forecasts	2017/18	2018/19	2019/20	2020/21	2021/22
CAPACITY (570 pupils per year group)	3,990	3,990	3,990	3,990	3,990
SURPLUS/DEFICIT	+35	-2	+32	+42	+72

Source: WBC 2017

13.4.22 The result of the Council's approach to forecasting future school enrolment is an estimated decrease of 37 primary school pupils between 2017/18 and 2021/22 in the 13 primary schools in the Warrington Central area (which Peel Hall sits within), from 3,955 to 3,918 pupils. For the Borough as a whole, WBC estimates that there will be an increase of 143 primary school pupils between 2017/18 and 2021/22.

13.4.23 As the capacity is likely to remain stable at 3,990 places across these 13 primary schools, WBC estimates that there will be a surplus of 72 places by 2021/22 before the proposed Peel Hall development is included in the figures (Table 13.4).

13.4.24 The capacity of secondary schools within the Warrington Central area which Peel Hall sits within, and their forecast enrolment to 2023/24, is summarised in Table 13.5.

Table 13.5 School Capacity – Central Warrington Secondary Schools excluding Peel Hall

Forecasts	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Year 7	555	578	674	653	676	666	686
Year 8	545	560	583	679	656	677	666
Year 9	556	549	564	588	681	657	677
Year 10	529	602	595	610	633	728	705
Year 11	590	532	606	599	612	634	728
TOTAL	2,775	2,821	3,022	3,129	3,258	3,362	3,462
CAPACITY*	3,500	3,500	3,500	3,500	3,500	3,500	3,500
SURPLUS / DEFICIT	+725	+679	+478	+371	+242	+138	+38

Source: WBC 2017

*WBC has confirmed that the available capacity for the Sec Central Warrington area is 660 per year for Y7 – Y9, and 760 per year Y10 – Y11. This 100 per year increase is for the University Technical College, which takes pupils from Y10 upwards and from all areas of Warrington, so does not just serve the "Secondary Central Warrington" community (even though it is located within 3 miles of Peel Hall).

13.4.25 The results of the Council's approach to forecasting future school enrolment is an estimated increase of 687 secondary school pupils between 2017/18 and 2023/24 in the Warrington Central area. For the Borough as a whole, the Council's approach results in an increase of 1,786 secondary school pupils between 2017/18 and 2023/24.

13.4.26 As the capacity at the five secondary schools in the Central Warrington catchment area will remain constant over this period at 3,500 pupils, without the proposed Peel Hall development, the current position of a surplus capacity of 725 places in 2017/18 reduces to a surplus capacity of 38 pupils by 2023/24.

13.4.27 These figures do not include any allowance for Peel Hall, but do include four proposed developments that have extant planning permission. These developments, and the pupils that are estimated to reside in them, are summarised in Table 13.6. In total, these four developments (comprising 126 houses in total) are estimated by WBC to generate a need for 38 additional primary school and 23 additional secondary school pupils over the next few years.

Table 13.6 Committed Developments Pupil Yield

Committed Development	Primary / Secondary	Total Dwellings	Total Pupils (@ 0.3/0.18 pupils per house)	2017/18	2018/19	2019/20	2020/21	2021/22
Greenwood Crescent	Primary	20	6	1.5	3.0	1.5	-	-
	Secondary		4	0.9	1.8	0.9	-	-
Navigation Street	Primary	76	23	-	-	7.6	7.6	7.6
	Secondary		14	-	-	4.6	4.6	4.6
Orford Farm	Primary	20	6	-	6	-	-	-
	Secondary		4	-	4	-	-	-
Sandy Lane	Primary	10	3	-	-	-	3	-
	Secondary		2	-	-	-	2	-
TOTAL	Primary	126	38	1.5	9	9.1	10.6	7.6
	Secondary		23	1	6	5.6	6.6	4.6

Source: WBC August 2017

*Calculated on the basis of 0.3 primary school pupils per house and 0.18 secondary school pupils per house

13.4.28 In addition to the provision of primary and secondary education facilities, Fearnhead, a settlement which is located within the local impact area, is home to the Warrington campus of the University of Chester.

Health Provision

13.4.29 Any development that generates additional housing and population locally will also have an impact on requirements for health and dental clinics. A review of the National Health Service [NHS] General and Personal Medical Services Provisional Experimental Statistics data (published November 2017 and

reproduced in Appendix 1) indicates that there are currently 20 General Practitioner [GP] surgeries within the local impact area within 5km of the proposed development. A total of 101 GP practitioners, or 81.5 Full Time Equivalent [FTE] GPs, are operating within these medical centres. Set against 157,428 patients as of September 2017, this would indicate that there around **1,932 patients** per FTE GP.

13.4.30 Two of these GP surgeries (Springfields Medical Centre and Westbrook Medical Centre) are no longer accepting new patients. If these two GP surgeries (containing 10 FTE GPs and servicing 17,168 patients) are removed from the figures, the number of patients per GP increases to **1,962**.

13.4.31 The Council's Planning Obligations SPD (January 2017) requires residential developments of 50 units or more to provide a contribution in order to secure delivery of appropriate enhancements to existing health facilities where there is insufficient capacity to meet the needs of the increase in population generated by the development. For large scale proposals which will generate a level of population increase which justifies the delivery of a new health facility, the Council will seek to secure a new facility as part of the overall development proposal [page 31].

13.4.32 The SPD further states that, based on the National GP Contract:

“each GP should serve 1,800 patients on average. The NHS’s preference is for GP services to be provided as health centres with a minimum of 4 GPs plus support services. This equates to a surgery serving 7,200 patients. Similarly, each General Dental Practitioner should serve between 1,300 and 1,500 patients on average. Consequently GDPs will service an equivalent patient population as 4 GPs.” [paragraphs 3.117-3.118]

13.4.33 Based on the National GP Contract, each GP should serve 1,800 patients on average and therefore, 1,975 patients per GP is above the typical provision rate. This suggests that GP surgeries within the local impact area are operating above capacity.

13.4.34 The local impact area also accommodates the NHS's Warrington Hospital, which has 500 in-patient beds and is situated around fifteen minutes' drive (6.3km) from the Peel Hall site.

13.4.35 There are also currently 14 dental clinics located within the local impact area. Two of these surgeries are only accepting referrals. Of the remainder, 9 of these clinics (containing 42 out of the 61 dental practitioners) are accepting new patients, which suggests that there remains some capacity at existing dental clinics to accept additional patients likely to arise from proposed developments.

13.4.36 The Council's Planning Obligations SPD suggests that each General Dental Practitioner [GDP] should serve between 1,300 and 1,500 patients on average (paragraph 3.118). Whilst comparable data is not available online to indicate how many patients each GDP has, the fact that over two thirds of the GDPs within 5km of the proposed development site are still accepting new patients suggests that there remains some capacity at existing dental clinics to accept additional patients likely to arise from the proposed development.

13.4.37 Details of these GP surgeries and dental clinics are provided in Appendix 13.

Sport, Open Space and Recreation

13.4.38 The July 2016 Socio-Economic Assessment reported the findings of WBC's 2012 Open Space Audit Position Statement. In July 2016 the Council published a revised Open Space Audit (surveyed June 2015) which updates the findings of the 2012 Audit. It also updated the standards to ensure compliance with the Fields in Trust (FiT) Planning & Design for Outdoor Sports and Play (2008).

13.4.39 The 2015 Audit identifies that the Borough had 1,876 ha of open space, or 10.3% of the total land area. Table 10 of the Audit indicates that the amounts of open space typology have increased across most of the range since the 2012 Audit, predominantly due to the identification of new sites. However, the number of equipped play sites has reduced significantly since 2012, mainly due to the loss of smaller equipped play sites.

Table 13.7 Comparison of the number of audit entries assigned to each Typology

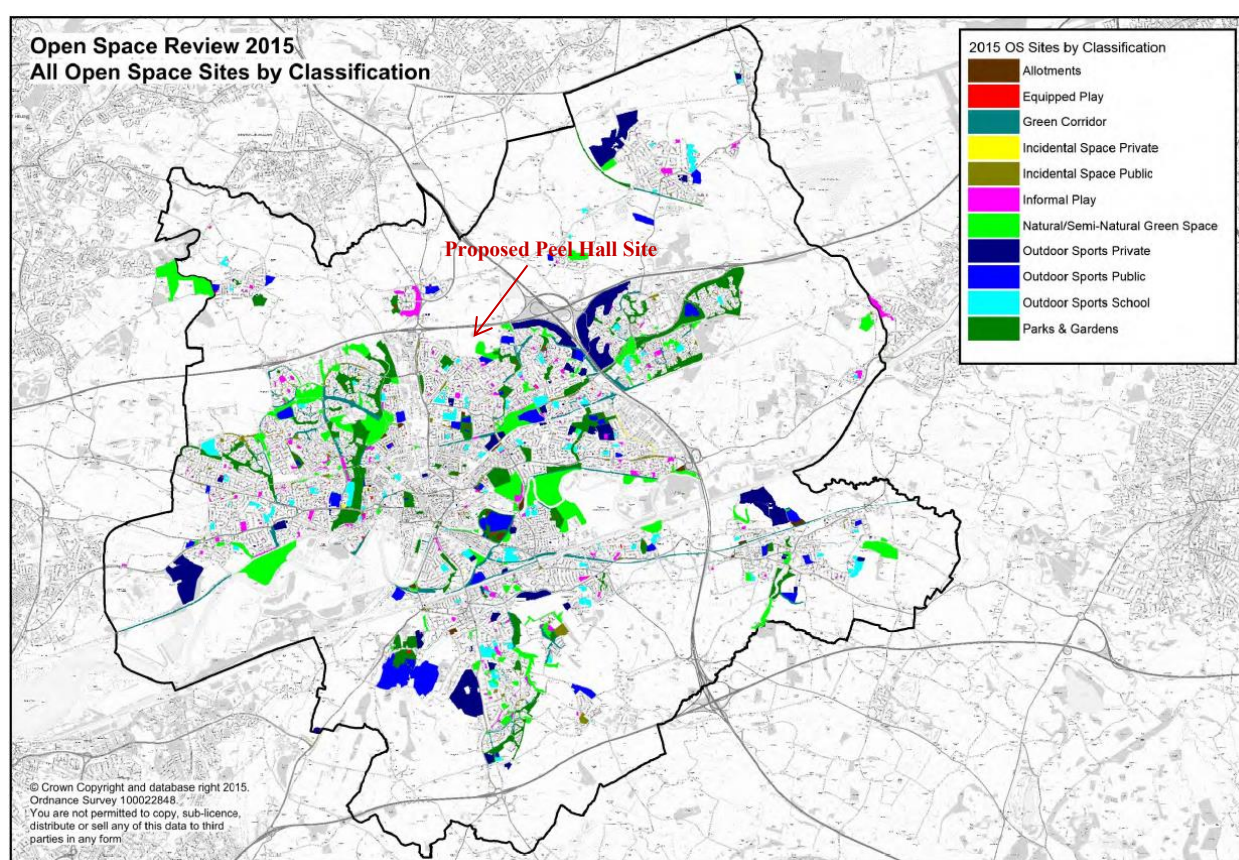
Typology	2012 Sites	2015 Sites	Change	2012 Ha	2015 Ha	Change
All	1,073	1,221	+148	1,613	1,876	+263
Allotments	16	16	0	16	16	0
Cemeteries and Churchyards	7	0	-7	22	0	-22
Equipped Children's Play	165	130	-35	10	11	+1
Green Corridors	109	171	+62	137	152	+15
Incidental Space	164	194	+30	47	49	+2
Informal Children's Play	231	252	+21	102	92	-10
Natural / Semi Natural Green Space	112	142	+30	417	440	+23
Outdoor Sports	184	195	+11	468	684	+216
Parks & Gardens	81	121	+40	392	432	+40
Other	4	0	-4	2	0	-2

Source: WBC Open Space Audit 2015

13.4.40 The Council's policy approach to open space is to protect, enhance and ensure the timely delivery of new provision where proven as needed to cater for the increased demand placed on such spaces brought about new developments and hence population growth.

13.4.41 Figure 13.6, taken from the Council's most recent Open Space Audit 2015, demonstrates that there is a broad range of Open Space and Sports Facilities in and around the proposed development site, including an Outdoors Sports facility directly to the east of the site; Natural/Semi-Natural Green Space (Radley Plantation) and Parks and Gardens (Peel Hall Park and Radley Common) to the south east of the proposed development.

Figure 13.6 All Open Space by Classification within Warrington



Source: Warrington Borough Council (2016) Open Space Audit 2015, Figure 2

13.4.42 The proposed development is in the 'Poplars and Hulme' Ward. The Open Space Audit [OSA] 2015 provides an assessment of the quantity, quality and accessibility of open space provision within this ward. Its findings for the 'Poplars and Hulme' Ward are as follows:

- 1 **Allotments:** 0 sites;
- 2 **Equipped Play:** 5 sites (0.39ha), of which 3 are LAPs, 1 is a LEAP and 1 is a NEAP. The OSA concludes that based on the current population, there is a deficit of 2.25 ha against the 2015 FiT standards;
- 3 **Green Corridors:** 5 (3.13 ha);
- 4 **Incidental Space:** 9 sites (1.49 ha);
- 5 **Informal Play:** 16 sites (3 ha). The OSA concludes that based on the current population, there is a deficit of 2.8 ha against the 2015 FiT standards;
- 6 **Natural/Semi-Natural Greenspace:** 6 sites (11.63 ha). The OSA concludes that based on the current population, there is a deficit of 9.48 ha against the 2015 FiT standards;
 - 7 **Outdoor Sports:** 7 sites (18.06 ha). 2 Private sites, 4 public sites and 1 school site. The OSA concludes that based on the current population, there is a surplus of 1.17 ha against the 2015 FiT standards;
 - 8 **Parks & Gardens:** 5 sites (20.78 ha). The OSA concludes that based on the current population, there is a surplus of 3.89 ha against the 2015 FiT standards;
 - 9 **Ward Total:** 53 sites (58.48 ha).

13.4.43 WBC's Planning Obligations SPD (January 2017) provides Open Space Typology Standards that inform the scale of on-site open space contributions that would be required for developments of 40 dwellings or more. These are summarised in Table 13.8.

Table 13.8 Open Space Typology Standards

Typology	General Standard	Standard per person	Accessibility Standard
Equipped Play	0.25 ha per 1,000 population	2.5m ² per person	LAP – 60m Straight Line LEAP – 240m Straight Line NEAP – 600m Straight Line
Informal Play	0.55 ha per 1,000 population	5.5m ² per person	300m Straight Line
Outdoor Sports	1.6 ha per 1,000 population	16m ² per person	Not applicable
Parks & Gardens	1.6 ha per 1,000 population	16m ² per person	District Park – 1,200m (15-25ha) Local Park – 600m (2-15ha) Small Park – 400m (0.4-2ha) Pocket Park – 300m (<0.4ha)
Natural / Semi-Natural Greenspace	2 ha per 1,000 population	20m ² per person	2,000m for 20ha> 300m for <20ha
Allotments	0.07 ha per 1,000 population	0.7m ² per person	1,000m Straight Line

Source: WBC Planning Obligations SPD (January 2017), Table 3

13.4.44 The SPD also states that planning obligations relating to pitch sports and built sports facilities will be sought on residential developments of 40 units or more where existing facilities have insufficient capacity to serve the increase in population arising from the development (page 28).

13.4.45 There are four distinct areas of public open space within the proposed Peel Hall development site at Radley Common Community Centre to the south of the site and the Mill Lane Playing fields to the east, totaling 7.72 ha. Details of these sites are shown in Table 13.8.

Table 13.8 Existing Public Open Space Provision on Site

OSA Reference	Site Name	Primary Classification	Area (ha)
245	Mill Lane Playing Fields ³⁷	Outdoor Sports Public	4.31
250	Radley Common Community Centre ³⁸	Outdoor Sports Public	2.78
250	Radley Common Community Centre	Informal Play	0.59
250	Radley Common Community Centre	Equipped Play	0.04
Total			7.72

Source: WBC Open Space Audit (2015)

13.4.46 The Council's Playing Pitch Strategy (2018) [PPS] provides an assessment of existing pitch provision at the Mill Lane and Radley Common sites in terms of Match Equivalent Sessions [MES]:

Table 13.9 Existing Playing Pitch Provision on Site

Name	Agreed Quality Rating	Existing Facilities	Current Site Capacity (MES)	Current Play (MES)
Mill Lane Playing Fields 1no. Adult 11v11-Grass	Poor	No changing facilities. Poor Drainage. Limited existing car parking.	1	0
Mill Lane Playing Fields 1no. Youth 9v9-Grass	Poor		1	0
Mill Lane Playing Fields 1no. Youth 7v7-Grass	Poor		2	0
Radley Common 1no. Adult 11v11-Grass	Disused		1	0
Total MES per week:			5	0

Source: WBC Playing Pitch Strategy Assessment Report (2018)

³⁷ In The 2015 OSA, this site is referred to as the "Ballater Drive Recreation Ground"

³⁸ In the 2015 OSA, this site is referred to as "Orford Community Centre". This centre is now referred to as "Radley Common Community Centre" on WBC's website and will be referred to as such in this report to avoid confusion with Orford Youth Centre (Site 209) and Orford Community Hub which are further to the south of the ward and outside of the site boundary.

13.4.47 Correspondence with WBC Officers in December 2016 regarding sport and recreation built facilities referred to the findings of the Council's Sports Facilities Strategic Needs Assessment [SFSNA] (April 2015). Officers reported that the current total quantity of swimming pool provision 'just about' meets the current local demand for casual / recreational swimming provision, and that new housing development should contribute towards the development and enhancement of sports facilities to meet identified need and any increased demand generated by such developments.

Community facilities

13.4.48 Demand for other community facilities from the residents living in the proposed Peel Hall development will primarily be observed close to the site. The nearest community centre to the application site is the Greenwood Community Centre, located 1km from the site. Other community halls/centres in Warrington Borough include:

- 1 Greenwood (1km)
- 2 Fearnhead Cross (1.4km)
- 3 Radley Common (1.6km)
- 4 Capesthorne (2.1km)
- 5 Orford (3km)
- 6 Westy (4.2km)
- 7 Nora Street Community House (4.7km)
- 8 Whitecross (4.8km)
- 9 Croft (5km)
- 10 Oakwood Community House (5.8km)
- 11 Sankey Bridges Community House (6km)
- 12 Bewsey Park Pavillion (6km)
- 13 Sandy Lane (6.6km)
- 14 Culcheth (8.5km)
- 15 Meeting Lane (10.5km)

13.5 Potential Effects

Introduction

- 13.5.1 The development proposes to build up to 1,200 new dwellings, a 60-unit retirement home, a local centre, a food store and public open spaces.
- 13.5.2 This section assesses the main socio-economic impacts from this development during both the construction and occupation phases of the proposed scheme.
- 13.5.3 Assuming a favourable appeal decision later this year, and with a Reserved Matters application approved and conditions discharged by Q3 2021, it is assumed that construction works could commence in Q4 2021 and run for around 11 years until 2032.

Population Increase

(Note – Table 13.4 in the ES, ‘Population Impact of the Proposed Development’, should now be referred to as Table 13.9 following the inclusion of new Tables in Section 13.4 of this Addendum).

- 13.5.4 By using data from the 2011 Census the average household size of each house type has been estimated, to provide an indication of the likely population size of the proposed development. This is set out in Table 13.4Error! Reference source not found..

Table 13.1 Population Impact of the Proposed Development

Type of Residential Unit	Number of residential units in the proposed development ³⁹	Increase in Population
Flat (1 bedroom)	72	91
Flat / House (2 bedroom)	386	711
Semi-detached (3 bedroom)	620	1,524
Detached (4 bedroom)	121	366
Residential Care Home (1 bedroom)	60	60
TOTAL	1,260	2,753

Source: Census 2011 / Mid-Mersey SHMA (2016) / Lichfields Analysis

³⁹ At this stage the dwelling split of the proposed development is not known. In the absence of this information the market housing requirement from the Mid-Mersey (Halton, St. Helen's and Warrington) SHMA (2016) has been used: 1-bed: 6%, 2-bed: 32.2% 3-bed: 51.7%, 4+bedrooms: 10.1%.

- 13.5.5 On this basis, the additional resident population that arise from development would amount to 2,693 persons for the 1,200 C3 dwellings, and a further 60 persons from the 60 C2 Care Home units, equalling 2,753 residents in total. Based on data from the 2011 Census, this increase would be equivalent to a 2.2% rise in the population of the local impact area (which had a population of 123,846 at the time of the 2011 Census), and a 1.4% rise in the wider impact area of Warrington Borough (with a population of 202,230 in 2011).
- 13.5.6 This additional population estimate assumes that all residents of the new dwellings would not already be living in the area. However in reality many of the new dwellings will be occupied by existing local residents (e.g. residents buying their first homes, trading up, or residents on the Housing Association/Council waiting lists). It is difficult to estimate what this proportion would be overall, and in any event existing residents relocating in this way could free up existing dwellings for occupation by other new residents, adding to the total population. For the purpose of assessing worst case impacts, and thereby in the interests of providing a robust assessment, all of the population increase is assumed to be additional to the local area.
- 13.5.7 The implied level of growth in the resident population of the local impact area (2.2%) does not signify a significant change to existing population levels. However the real significance of these impacts will depend on their implications for other socio-economic factors (e.g. health and education provision), largely depending on whether the current availability of community infrastructure can accommodate the additional needs generated by the proposed residential-led scheme. It should be noted that the additional income and expenditure of these new residents within the economy will deliver positive benefits to the local area (e.g. an increase in GVA). These impacts are assessed in detail below.

Impacts during Construction

Direct Employment

- 13.5.8 The developer has estimated that the total cost of construction of the proposed mixed-use development (including the residential properties, in addition to the care home/ assisted living properties) to be approximately £150 million.
- 13.5.9 This can be used to estimate the amount of construction employment that is likely to be generated by the scheme. The Office for National Statistics [ONS] Annual Business Survey data indicates that the

average ratio of expenditure (i.e. on materials, goods and services) to jobs in the construction industry was £121,192 in 2018.⁴⁰

13.5.10 Applying this ratio to the estimated construction cost outlined above implies the development would be likely to generate 1,238 person-years of construction employment over the duration of the build period. As the proposed development is to be built over the course of 11 years, this would support **113 temporary construction jobs per annum** on average during the construction phase, or **124 FTE construction jobs**.⁴¹ Although national construction firms sometimes use their own permanent workforce on projects (who are likely to be drawn from outside the local impact area) based on experience elsewhere it is likely that a proportion of these new construction jobs will be taken up by local workers (particularly if measures are in place to encourage local recruitment, such as apprenticeships). This will help to provide employment opportunities for some of the registered Jobseeker Allowance [JSA] claimants in the local area that are seeking work.

Indirect and Induced Employment

13.5.11 Housing construction also involves purchases from a range of suppliers who, in turn, purchase from their own suppliers via the supply-chain. The relationship between the initial direct spending and total economic impacts is known as the 'multiplier effect', which demonstrates that an initial investment can have much larger economic benefits as this expenditure is diffused through the economy. The construction sector is recognised to be a part of the UK economy where there is a particularly high domestic benefit in the supply chain. Research from 2009 showed the construction sector imported less than 8% of its supply, while the UK car manufacturing sector imported nearly 28%.⁴²

13.5.12 It is anticipated that businesses within Warrington would benefit from trade linkages established during the construction phase of the proposed development. As a result, further indirect jobs would be supported within the area through the suppliers of construction materials and equipment.

13.5.13 In addition, businesses would also be expected to benefit to some degree from temporary growth in expenditure linked to the direct and indirect employment effects of the construction phase. It would be expected that the local economy would gain a significant temporary boost from the wage spending of workers within local shops, bars and restaurants, and other services and facilities. Such effects are typically referred to as 'induced effects'.

⁴⁰ Annual Business Survey 2018, Released November 2019

⁴¹ Based on HM Treasury assumption that 10 person-years of employment equates to 1 permanent position.

⁴² UK Contractors Group (2009) Construction in the UK Economy: The Benefits of Investment

13.5.14 Research undertaken on behalf of the National Housing Federation indicates the construction industry has an indirect and induced employment multiplier of 2.51.⁴³ Applying this employment multiplier to the 124 direct FTE construction jobs each year derived above indicates an additional **187 FTE jobs could be supported** by the proposed development in sectors throughout the UK economy. This is in addition to the 124 FTE jobs discussed earlier.

13.5.15 In summary, it is considered that the impact of the construction employment generated by the proposed development is **beneficial** and of **moderate** magnitude across the local impact area.

Occupational and Operational Impacts

Economic Impacts

Direct Employment

13.5.16 Alongside residential uses, the development scheme at Peel Hall will contain some commercial uses that will generate employment and expenditure within the local area (i.e. once the scheme is fully built-out and operational). The non-residential elements of the proposed mixed-use development will include a 60-bed residential care home, land for a 1 Form Entry [1FE] primary school, a retail foodstore and a local centre, all of which are likely to generate employment.

13.5.17 In order to estimate the likely employment supported by these retail and office spaces, the Employment Densities Guide (2015), produced by the HCA, can be used by applying an average job ratio to their floorspace. On this basis, and as set out in Table 13.11, it is estimated that around **315 jobs** (239 FTE jobs) could be directly supported by the proposed development.

⁴³ National Housing Federation, 2013; an employment multiplier of 2.51 implies that for every one direct job generated a further 1.51 indirect and induced jobs are supported in the supply chain.

Table 13.11: Employment Generation from the proposed Peel Hall Development during Operation

Proposed Use	Proposed New Floorspace (GIA) (sq. m)	Proposed New Floorspace (GEA) (sq. m) + 5%	Average Job Density	Average FTE Employment Density	No. Jobs Generated	FTE Jobs Generated
Foodstore	2,000	2,100	1 job per 15 sq. m	1 job per 22 sq. m	140	95
Local Centre: Financial / Professional A2	200	210	1 job per 17 sq. m	1 job per 19 sq. m	12	11
Local Centre: Restaurant / Café A3	200	210	1 job per 16 sq. m	1 job per 22 sq. m	13	10
Local Centre: Fast Food Restaurant A5	200	210	1 job per 11 sq. m	1 job per 14 sq. m	19	15
Pub / Family Restaurant	800	840	1 job per 13.5 sq. m	1 job per 18.5 sq. m	62	45
Residential Care Home	60 beds (approx.)	60 beds (approx.)	0.875 jobs per bed ⁴⁴	0.875 jobs per bed	53	53
1 FE Primary School	1FE	1FE	16 jobs per 1FE	10 FTE jobs per 1FE	16	10
TOTAL					315	239

Source: Satnam / HCA Employment Densities Guide (2015) / Lichfields' Analysis

Net Additional Effects

13.5.18 In order to estimate net employment impacts, the extent to which the proposed development would displace jobs from other existing business in the area is also considered.

Loss of Existing Jobs

13.5.19 There are no existing jobs on the site of the proposed development. Therefore, no jobs will be lost as a result of the construction stage of the proposed development.

Displacement Effects

13.5.20 Some of the new employment generated on the site may comprise jobs displaced from elsewhere in the local area. Net employment impacts in the local and regional area have been estimated by considering the extent to which the proposed development would displace some jobs from existing local businesses by taking into account typical job displacement factors for these uses⁴⁵.

⁴⁴ Based on Lichfields experience of an 80-bed care home employing around 70 FTE staff, therefore generating $80 / 70 = 0.875$ FTE jobs per bed

⁴⁵ HCA (2014): Additionality Guide, 4th edition

Displacement effects can be reduced where an area is already deficient in, for example, employment space or is expected to experience strong job growth.

13.5.21 The increase in the resident population as a result of this development, which is discussed in more detail below, will create additional demand for local services, retail and leisure floorspace. Furthermore, the amount provided in the scheme has been designed to address this increased need, rather than to address wider unmet local needs. In addition to the strong network of local centres, this should minimise any impacts on existing retail, pub and community facilities of this type in the surrounding area hence it is considered that any displacement of retail and leisure jobs will be towards the lower end of any range.

13.5.22 A typical low level of job displacement would be in the order of 25% (i.e. 25% of the new jobs on the site will be relocations from elsewhere in the area). This corresponds to a 'low' level of displacement, as defined by the HCA Additionality Guide Fourth Edition (2014).

13.5.23 After allowing for such displacement effects, the total net direct jobs resulting from the proposed development is estimated to be in the order of 236 jobs (179 FTEs), as shown in Table 13.12. It is considered that this is a conservative approach to take overall, as it is unlikely that there would be very little, if any, displacement of the education / health / community jobs as these would be generated directly by the new community's needs.

Table 13.12: Net Direct Effects on Employment - Displacement

Total Jobs	FTE Jobs	Displacement Factor	Net Additional Jobs – Less Displacement (jobs)	Net Additional Jobs – Less Displacement (FTE)
315	239	25%	236	179

Source: Lichfields Analysis / HCA (2014) Additionality Guide Fourth Edition

Multiplier Effect

13.5.24 Some indirect employment will also be supported by the expenditure on goods and services within local businesses by the occupiers of the employment uses. The wage spending by employees of these commercial operations, and also the local businesses supplying these facilities, will support further induced jobs within local shops, services and other businesses.

13.5.25As with the construction employment detailed above, there will also be a range of indirect jobs that will be supported by the spending on goods, supplies and services directed from the firms which occupy the retail and leisure uses of the site, as well as the Care Home. For example, many businesses in the Warrington area would require services such as buildings and gardens maintenance; health and hygiene products; medical prescriptions and pharmacists; food and laundry services etc.

13.5.26The spending of wages by both employees on the site and of the local firms supplying goods and services to these companies will also support induced employment in other local shops, other services and other firms. These types of employment are normally estimated using employment multipliers derived from research on similar operations elsewhere, with adjustments to reflect the specific characteristics of the proposed development, the amount of spending retained in the local area, and local economic and labour market conditions.

13.5.27HCA Guidance on calculating the additionality of economic regeneration projects has been used to select a combined employment multiplier (which combines the supply linkage multiplier and the income multiplier) of 1.21 (for the local area) and 1.38 (for the wider region) to estimate both indirect and induced employment for retailing, leisure and community space.⁴⁶

13.5.28Using these multipliers it is estimated that the 236 additional direct jobs (179 FTE) produced by the scheme could result in a further 38 'spin-off' FTE jobs within local services and other businesses in the local impact area, and 68 FTE jobs within the wider Warrington and North West region.

13.5.29On this basis, it is estimated that, once in operation, the proposed Peel Hall development could support approximately **217 FTE jobs** in total within the local impact area (and **247 FTEs** within the wider region).

13.5.30In summary, it is considered that the impact of the employment generated by the commercial and community uses and Care Home elements of the proposed development is **beneficial** and of a **moderate** magnitude across the local impact area, and of a **minor magnitude across the wider impact area**.

⁴⁶ HCA (2014) Additionality Guide Fourth Edition

Resident Expenditure

- 13.5.31 The proposed mixed-use development scheme also affords an opportunity to increase local expenditure levels. The scale of these benefits is determined by the spending patterns of local residents, and the extent to which new residents move into the area from elsewhere.
- 13.5.32 Whilst the residents of the 60 C2 Nursing Home units will, through their spending and patronage, support local shops and services, it may not be of the same magnitude as the residents living in the 1,200 C3 dwellings. As a consequence, and to ensure the results of this ES Chapter are robust, the residential expenditure set out below has been calculated on the basis of the 1,200 C3 dwellings alone and hence represents a 'worse case' scenario.
- 13.5.33 Recent research suggests the average homeowner spends around £5,500 to make their house 'feel like a home' within a year and a half of moving into a new property⁴⁷. This money is generally spent on furnishing and decorating a property (i.e. assuming the property is unfurnished). This expenditure provides a range of benefits for the economy including supporting local employment.
- 13.5.34 Applying this average level of one-off spending on household products and services, it is estimated that residents of the 1,200 residential units would **generate around £6.6 million of first occupation expenditure**. This injection of expenditure would provide a significant boost to businesses in the local economy.
- 13.5.35 Analysis of Output Area Classification data suggests that the residential areas near Peel Hall mostly comprise households in the 'Suburbanites' socio-economic classification group⁴⁸. It is anticipated that the new residents of the proposed market housing at Peel Hall would broadly be in the same type of household group, albeit occupiers of the proposed affordable housing component may fall within a different socio-economic classification.
- 13.5.36 The ONS Family Spending Survey 2018 (2019 Edition) provides data on household spending by socio-economic classification. This survey indicates an average expenditure level of £656.20 per week for households in the 'Suburbanites' group. The spending level for North West households is on average around 9% lower than the UK average, which results in an estimated household expenditure level of

⁴⁷ Research carried out by OnePoll on behalf of Barratt Homes, August 2014

⁴⁸ As identified by <http://www.maptube.org/map.aspx?mapid=1>

£595.92 per week for households. Similarly, average expenditure levels amongst the 'Hard-pressed living' group amounts to approximately £479.60 per week before the regional adjustment.

13.5.37 Based on these assumptions, it is estimated that the households of the 1,200 new residential units would generate **total gross expenditure of around £34 million each year**.

13.5.38 It is recognised that not all residents of the proposed development will be 'new' to the local area as some will relocate from elsewhere within the Borough or the region. National research provides standards on the average distances moved between a head of household's present and previous residential address, which can be used to estimate the proportion of the population of the proposed development that may be 'new' to the local area.

13.5.39 In addition, only a proportion of the gross expenditure by new residents of the proposed housing will be retained within Warrington Borough. Adjustments have been made on the basis of existing shopping patterns and the leakage of spending to other nearby areas such as Liverpool, Chester and Manchester.⁴⁹

13.5.40 Taking these factors into consideration, it is estimated that total net additional expenditure of around **£13 million per year** on average will be created by new residents to the area, and be retained within the area (within a distance of ten miles from the site). This net additional expenditure will support the vitality and viability of local businesses, and could encourage other businesses to relocate to the market. It is also expected that this extra resident expenditure could generate a further **146 local FTE jobs** in retail, leisure, hospitality and other service-based sectors.

13.5.41 In summary it is considered that the impacts of the increased resident expenditure generated by the proposed development is **beneficial** and of a **moderate** magnitude across the local impact area.

Public Revenue and Savings

13.5.42 This section deals with the benefits delivered by the proposed development that accrue to the local authority, and to the wider healthcare system as a whole.

⁴⁹ WYG (August 2015) Warrington Retail and Leisure Study

Local Authority Income

13.5.43 In 2010 the Coalition Government introduced an incentive-based system to support their plans to increase the supply of new homes in locations that were willing and able to accept the development. The New Homes Bonus [NHB] originally matched for a 6-year period the increase in Council Tax income from new homes or homes that have brought back in to use. This additional funding is potentially a major new income stream for local authorities at a time when their finances are being squeezed through the public sector austerity measures. The increased income is non ring-fenced and therefore local authorities have discretion to use the cash in the most beneficial way in support of their communities.

13.5.44 As part of the provisional Local Government Finance Settlement 2016, Sajid Javid, Secretary of State for Communities and Local Government, said that *“for all its successes, the system can be improved.”* He confirmed that from 2017 a national baseline for housing growth will be introduced of 0.4%. Below this 0.4% threshold, the NHB will not be paid. The aim of this change is to ensure that *“the money is used to reward additional housing rather than just normal growth”*. He also confirmed that in 2017-18, NHB payments will be made for five, rather than six years, and that the payment period will be reduced again to four years from 2018-19. The funding released from this measure will be retained by local authorities to contribute towards adult social care costs *“recognising the demographic changes of an ageing population, as well as a growing population”*⁵⁰.

13.5.45 The proposal will deliver up to 1,200 dwellings. Using the standard method of calculation contained within the NHB Calculator it is estimated that the scheme would generate approximately £1.9 million of NHB award following the scheme's completion, which equates to a total of approximately **£7.7 million over a 4-year period**. Although the timetable of construction for the dwellings is as yet unknown, this is the sum of all revenue that will be collected once all the dwellings are constructed. As noted above, the calculator provides the potential payments of the NHB. These would only materialise if the Council increases its dwelling stock above the annual national baseline level (which remained at 0.4% for 2019).

13.5.46 This income would also be enhanced by an additional Council Tax income of approximately **£1.9 million per annum** in perpetuity following the scheme's completion (based on 2019/20 rates).

⁵⁰ House of Commons (December 2016): Briefing Paper – The New Homes Bonus (England), page 32

13.5.47 The impact on the Council's income as a direct result of the Development Project is therefore assessed to have a **beneficial impact, and of moderate** significance, although it is accepted that the Practice Guidance⁵¹ indicates that they should not be given significant weight in the planning balance unless they make the scheme acceptable in planning terms, which in this case would not be met.

Local Labour Market Impact

13.5.48 Creating an economic activity rate for the entire population of the Borough and applying it to the likely additional population generated by the proposed C3 dwellings gives an indication as to the quantity of people likely to be added to the local labour market. Applying the rate of economically active residents within the Borough adjusted for the percentage of population aged 16-64 (50.7%) results in an additional 1,366 people likely to be added to the labour market as a result of the proposed development.

13.5.49 An increase of 1,366 economically active people would increase the Borough-wide total to 107,666. This is equivalent to a growth rate of 1.3% of economically active residents within Warrington Borough. However as noted previously, in reality it is likely that the labour market impacts will be lower due to some of the incoming residents already residing within the local area, which subsequently means the number of net additional workers would also likely to be less. New residents of the dwellings may also already work locally, but commute in from elsewhere. As such, and in the absence of further information concerning the origin/destination of those likely to be moving into the proposed development, these calculations represent a 'best case' scenario. However, any increase in economically active people would commensurably grow the available workforce supporting local businesses. Likely commuting impacts are assessed below.

13.5.50 Overall, the total number of jobs likely to be generated by the proposed development should not create any significant pressures on the local labour market and will go some way to improving levels of economic inactivity in Warrington. As such, an increase in economically active persons within both the local and wider impact area can be considered **beneficial and of a minor magnitude**.

Housing Impacts

13.5.51 After completion, the primary impact of the proposed development on the local housing market will be the addition of around 1,200 new C3 dwellings to the existing stock of 87,943 dwellings (2011) in Warrington, constituting an increase of 1.4%. This development would help to deliver 6.3% of the

⁵¹ Planning Practice Guidance ID 21b-011-20140612

emerging target of 18,900 dwellings in Warrington between 2017 and 2037 (945 dpa), the housing need identified for Warrington Borough in the emerging Local Plan Preferred Development Option for Warrington (Proposed Submission Version Local Plan, March 2019).

13.5.52 The Housing Learning and Improvement Network [LIN] work undertaken for Warrington Borough states that there is currently a supply deficit of Residential Care units (relative to demand) within the Borough, with a current supply of 540 units set against a current demand of 1,008 units (equivalent to a deficit of 46%). This current demand is projected to increase to 1,690 by 2030, approximately when the proposed development (which will include 60 C2 care home spaces) will be almost completed⁵². The Care Home facilities will therefore bring benefits to the increasing proportion of elderly residents who reside in the Borough. It will also release some existing housing that is currently under-occupied into the wider market, thereby making more efficient use of the existing housing stock.

13.5.53 Warrington's Local Housing Needs Assessment (2019) assesses the overall need for affordable housing. It concludes that the overall need for affordable housing amounts to **377 homes per annum between 2017 and 2037**. At a rate of 25%, this would equate to an overall housing delivery of **1,508 dpa**.

13.5.54 Emerging Local Plan Policy MD4 – *Land at Peel Hall* states that “*In accordance with Policy DEV2 a minimum of 30% Affordable Housing shall be provided on site.*” This would equate to **360 affordable units** of the overall total of 1,200 dwellings at Peel Hall. Whilst the final mix of this proposed housing is yet to be confirmed and will be subject to negotiations with the Council, it may be assumed the development will provide a range of dwelling types, including around 30% affordable, or 360 dwellings of the 1,200 C3, enhancing the quality of housing choice in the area and going some way to addressing the high level of affordable housing need in the local area. It is worth noting that the 360 affordable dwellings provided as part of the proposed development is almost as high as the Borough's entire annual need for affordable housing (377 dpa).

13.5.55 The impact of the creation of both C3 housing and C2 Care Home units will be to enhance the quality of housing choice in the local market. The impact of market, care and affordable housing is therefore considered to be **beneficial, and of a moderate magnitude** in relation to the local impact area and Warrington Borough as a whole.

⁵² Housing Learning and Improvement Network (2014) Strategic Housing for Older People

Deprivation Impacts

- 13.5.56 Despite the area surrounding the proposed development site at Peel Hall being fairly prosperous (as characterised by the 'Prospering Suburbs' Output Classification Group), the area does still lie within an area that exhibits some deprivation issues. Housing deprivation issues, for instance, are typically the result of high house prices leading to affordability difficulties in the local market (although in other instances such deprivation issues relate to lower quality housing stock). The IMD 2019 indicated that the Lower Super Output Area [LSOA] in which the proposed site is located within (Warrington 006E) was ranked in the 30% most deprived LSOAs in England in terms of overall deprivation.
- 13.5.57 Moreover, there are other areas of Warrington which contain a high proportion of LSOAs ranked within the top 10% most deprived in England. By delivering greater housing choice and increased employment opportunities the proposed scheme will create significant deprivation benefits to the local area. The benefits of the proposed housing-led development scheme could therefore be expected to improve not only the socio-economic outcomes of the area in the immediate vicinity of the site, but improve the prosperity of other areas in the wider impact area (Warrington Borough).
- 13.5.58 For these reasons, it is expected that the mixed-use development scheme would have a **beneficial effect of a minor scale**, as it will increase housing supply in Poplars And Hulme (the ward in which the Peel Hall site is located), help to reduce any affordability difficulties that exist within the wider impact area and provide employment opportunities.

Commuting Impacts

- 13.5.59 As noted earlier, the construction of 1,200 new dwellings is assumed to increase the number of economically active persons within the area by some 1,366. Across the Borough, 96.7% of residents who are economically active are in employment which, if applied to the 1,366 figure, would result in 1,321 Peel Hall residents likely to be in employment. Consideration must therefore be given to potential impacts on commuting patterns arising from the direct permanent jobs which would result from the proposed development.
- 13.5.60 For the purposes of the assessment, it has been assumed that future commuting patterns for the proposed jobs will broadly reflect commuting patterns seen in the past. If it is assumed that 28% of these new residents were to commute outside of the local impact area - as currently occurs based on the 2011 Census data - the proposed development could produce a further 370 out-commuting trips each day to destinations outside of the local impact area.

13.5.61 While some employment uses are proposed within the mixed-use scheme, it is expected that the actual amount of out-commuting trips created by the scheme will be reasonably close to that projected (i.e. if local recruitment initiatives are not endorsed). However, it is also possible that some workers with existing jobs in Warrington, but who currently reside outside the Borough, will become residents of the new housing development, helping to reduce their journey time and the level of commuting within the local impact area.

13.5.62 Therefore, this represents a worse-case scenario, as the high-quality housing to be provided as part of the proposed development at Peel Hall is likely to help retain local employees as they seek to move up the housing ladder, thus potentially helping to reduce levels of in-commuting to the Borough. The employment uses to be provided as part of the Peel Hall scheme is also likely to help attract and retain local workers.

13.5.63 On this basis, the impact of the proposed development on commuting patterns is assessed as being **adverse** but of a **minor** magnitude.

Education Impacts

13.5.64 In assessing the actual requirement for school places in the catchment area, it is necessary to take into account the existing level of school capacity and the local education authority's future plans for growth.

13.5.65 The impact of the proposed development on the provision of education in the local impact area will largely depend on the number of additional children of school age that are generated by the housing scheme, and also the existing availability of spare school places in the area.

13.5.66 As mentioned previously, excluding Peel Hall, WBC's data suggests that there will be a modest surplus of primary school places in the local area, equal to 72 children, by 2021/22. There will be a smaller surplus of 38 secondary school places in the catchment area by 2023/24.

13.5.67 The Council's current and forecast primary school pupil enrolments, including an allowance for Peel Hall, are summarised below in Table 13.12. This projects that the number of primary school pupils in the Warrington Central catchment area will increase from 3,955 in 2017/18 to 4,055 in 2021/22. Compared to the annual capacity for 3,990 primary school pupils, the Council forecasts a deficit of 24

places in 2018/19, increasing to a deficit of 65 pupils by 2021/22. This compares with a surplus of 72 places without Peel Hall (i.e. a difference of 137 places in 2021-22 is estimated by WBC to be attributable to Peel Hall).

Table 13.12 School Capacity – Warrington Central Primary Schools, including Peel Hall

Forecasts	2017/18	2018/19	2019/20	2020/21	2021/22
Reception	565	542	565	556	543
Year 1	582	570	549	574	563
Year 2	573	587	576	558	581
Year 3	561	578	594	585	565
Year 4	565	566	585	602	592
Year 5	596	570	573	593	610
Year 6	513	601	577	581	601
TOTAL	3,955	4,014	4,019	4,049	4,055
CAPACITY	3,990	3,990	3,990	3,990	3,990
SURPLUS/DEFICIT	+35	-24	-29	-59	-65

Source: Warrington Borough Council (August 2017) School Capacity and Enrolment Forecast

13.5.68 The Council's forecast secondary school pupils enrolments are summarised in Table 13.13. This data, provided by WBC Officers to Lichfields in August 2017, forecasts that the number of secondary school pupils at schools within the local catchment area will increase from 2,775 in 2017/18 to 3,661 in 2023/24. Compared to the annual capacity for 3,500 secondary school pupils the Council forecasts a surplus of 72 places in 2017/18, reducing to a deficit of 161 by 2023/24 once the Council's estimated pupils from the proposed Peel Hall development are included.

Table 13.13 Forecast secondary school enrolment

Forecasts	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Year 7	555	581	684	672	706	706	737
Year 8	545	563	591	685	680	712	711
Year 9	556	551	570	600	701	685	717
Year 10	529	604	601	620	650	752	739
Year 11	590	534	612	609	626	655	757
TOTAL	2,775	2,833	3,058	3,186	3,363	3,510	3,661
CAPACITY	3,500	3,500	3,500	3,500	3,500	3,500	3,500
SURPLUS / DEFICIT	+725	+667	+442	+314	+137	-10	-161

Source: Warrington Borough Council (August 2017) School Capacity and Enrolment Forecast

13.5.69 Again, comparing these figures with the Council's own secondary school projections (excluding Peel Hall) suggests that the Central Warrington Catchment area will move from a surplus of 38 places by

2023/24, to a deficit of 161 places with Peel Hall (i.e. a difference of 199 places in 2023-24 is estimated by WBC to be attributable to Peel Hall).

13.5.70 The Council's assessment therefore forecasts a deficit of both primary and secondary school places once Peel Hall is included in the projections, but a modest surplus if the development is excluded.

13.5.71 This is based upon the Council's yield of 0.3 primary school pupils and 0.18 secondary school pupils per two or more bedroom dwelling. On this basis, if all of Peel Hall's 1,200 dwellings comprised 2 or more bedrooms, then the primary yield for the development would be 360 pupils, whilst the secondary school yield would be 216 pupils.

13.5.72 Land will be made available for a 1FE Primary School as part of the Peel Hall proposals, capable of accommodating 210 pupils. Without the Peel Hall development, WBC considers that there would be a surplus of 72 primary school places in 2021/22. The Council has not attempted to forecast primary or secondary school enrolment in the Central Warrington area over the full 11-year build programme, and therefore it would be inappropriate to comment on whether further education capacity is likely to be required by 2029/30 as we do not know how school rolls are likely to change in the area.

13.5.73 Furthermore, although the breakdown of unit sizes at Peel Hall is unknown at present, it is unlikely that 100% of the 1,200 units will have 2 or more bedrooms. Any 1-bed properties would not be subject to WBC's primary/secondary school yield calculation.

13.5.74 Even allowing for this uncertainty, the proposed development is likely to have an **adverse impact** on primary and secondary educational capacity in the area without further mitigation. This would be of a **minor magnitude for primary and of a moderate magnitude for secondary** educational provision.

Healthcare Impact

13.5.75 Growth in the local population resulting from the 1,200 C3 dwellings at the proposed Peel Hall development is likely to increase the number of patients of the 81.5 FTE GPs to 160,121 (i.e. equal to approximately 33 new patients, or a 1.7% increase, for each FTE GP). This would increase the average number of patients per FTE GP to 1,965 (or 19,999 including only the 18 GP practices

accepting new patients). Taking into consideration the typical provision rate of 1,800 patients per GP⁵³, this rise in demand will be in excess of the Department of Health's standard for General Practitioner Provision.

13.5.76 There are 14 dental health facilities employing a total of 61 dentists operate within the local area, of which 9 (including 42 GPs) are accepting new patients. The growth in the local population will increase the number of patients for each of the 9 facilities accepting new patients.

13.5.77 Because there already exists an over capacity with regard to the number of patients per GP provision at present, it is considered that the increased healthcare impact resulting from the proposed Peel Hall development is likely to be **adverse, but of a minor magnitude** given the scale of the increase and the fact that 18 of the 20 practices are still accepting new patients.

Open Space & Recreation Impact

13.5.78 As already noted, the gross increase in the resident population created by the new dwellings will amount to an increase of 2,753 people in the local area, 60 of which will live in the proposed care home⁵⁴. The additional residents will create extra demands on existing sports, recreation facilities and open spaces within the local impact area. Table 13.15 assesses the Council's requirements (as set out in the Council's Planning Obligations SPD (January 2017)) against the current Peel Hall proposals.

Table 13.15: Adopted Open Space Provision Standards and On-Site Provision within the Proposed Development

Typology	General Standard	Standard per person	Peel Hall Development Requirement	Peel Hall Proposed Site Figures	
Equipped Play	0.25 ha per 1,000 population	2.5m ² per person	0.67 ha per 2,693 residents	Play Space Provisions:	The equipped and informal play space provision to be met by individual housing plots.
Informal Play	0.55 ha per 1,000 population	5.5m ² per person	1.48 ha per 2,693 residents		
Outdoor Sports	1.6 ha per 1,000 population	16m ² per person	4.31 ha per 2,693 residents	Formal Sport Ground:	See Table 13.16.
Parks & Gardens	1.6 ha per 1,000 population	16m ² per person	4.40 ha per 2,753 residents	Natural/ Semi Natural Areas (this includes all areas)	10.1 ha (Open space shown on the proposed Parameters)

⁵³ WBC (January 2017), Planning Obligations Supplementary Planning Document, LP 14, Para 3.117

⁵⁴ These 60 residents have been excluded from the requirement calculations in the Table for equipped play, informal play and outdoor sports.

Typology	General Standard	Standard per person	Peel Hall Development Requirement	Peel Hall Proposed Site Figures	
Natural / Semi-Natural Greenspace	2 ha per 1,000 population	20m ² per person	5.51 ha per 2,753 residents	set aside as ecological/ motorway buffer zones, retained vegetation areas and attenuation pond areas):	Plan meets this requirement)
Allotments	0.07 ha per 1,000 population	0.7m ² per person	0.19 ha per 2,753 residents		

Source: WBC Planning Obligations SPD (January 2017), Table 3 / Appletons (February 2020) / Lichfields Analysis

13.5.79 The proposed open space provisions for Children's play spaces, Parks & Gardens, Natural & Semi-Natural Greenspace and Allotments, meet the requirements set out in the OSA.

13.5.80 The proposed outdoor sports provision is set out in Table 13.16:

Table 13.16: Proposed Outdoor Sports Provision

Name:	Improvements:	Potential Site Capacity:
On Site 1no. Adult 11v11- Grass (Pipe drained with sand grooves or slit drains)	 <	

Source: Appletons (February 2020)

13.5.81 As set out in Table 13.16, the existing sports pitch provision on site is assessed to be of poor quality, and whilst there is a current Match Equivalent Sessions [MES] capacity of 5 per week, the pitches are not currently used. The proposed provision set out in Table 13.16 increases the MES capacity to 12 per week, showing betterment. Furthermore, the pitches provided will be of a high standard, with high quality drainages systems, new changing facilities and car parking. The improved quality of the pitches and new changing facilities provides the developments contribution to the 4.4 ha requirement as agreed with the Council.

13.5.82 Furthermore, as noted above, WBC Officers consider that there is a need for new developments to contribute towards the development and enhancement of swimming pool facilities to meet an identified need and to mitigate any increased demand generated by such developments. Correspondence from WBC Officers in December 2016 regarding sport and recreation built facilities stated that:

“The proposed Bewsey & Dallam Hub development is considered to be well placed to cater for the increased demand for swimming pool provision arising from the development because it is well within the 30 minute travel time for swimming pool provision that the SFSNA employs.”

13.5.83 Officers estimated that, based on 2.3 persons per home, the proposed Peel Hall development would generate additional demand amounting to 178 swimming pool visits per week.

13.5.84 There are 12 community venues identified within a 5km radius of the development site itself. Although it is hard to determine to what extent the new residents of the development will use the community venues, it is expected the facilities will be largely able to cope with the additional demand resulting from the increased population the development will bring.

13.5.85 The proposed development, by providing suitable on-site open space provision and significant improvements to current sub-standard sports fields at a higher quality than currently exists, is therefore considered to have a **beneficial impact of a minor scale** upon open space and recreation provision within the area of impact.

Summary

13.5.86 The significance of the socio-economic impacts identified has been evaluated against the significance criteria matrix. The impacts are assessed as beneficial, neutral or adverse, while their relative magnitude are classified as substantial, moderate, minor or negligible. The significance of the impacts are summarised in Table 13.17.

Table 13.17: Socio-Economic Impacts against the Baseline Position (without Mitigation)

Socio-Economic Factor	Impact	Magnitude
Construction Employment	Beneficial	Moderate
Operational Employment	Beneficial	Moderate
Resident Expenditure	Beneficial	Moderate
Public Revenue	Beneficial	Moderate
Local Labour Market	Beneficial	Minor
Housing	Beneficial	Moderate
Deprivation	Beneficial	Minor
Commuting	Adverse	Minor
Primary Education	Adverse	Minor
Secondary Education	Adverse	Moderate
Healthcare	Adverse	Minor
Open Space & Recreation	Beneficial	Minor

Source: Lichfields Analysis

13.6 Mitigation and Monitoring

Introduction

- 13.6.1 The proposed mixed-use development at Peel Hall is expected to generate positive impacts to the local area with regards to employment, the local population, the local labour market, housing, open space and deprivation levels, but create some adverse effects on commuting, education, recreation and healthcare provision. Any negative impacts are regarded as being largely minor, so only limited mitigation measures are expected to be necessary.

Construction Mitigation Measures

- 13.6.2 The creation of 124 FTE construction jobs during the construction phase is in itself a positive impact that will not require any mitigation measures. It should be possible to maximise the socio-economic benefits of constructing the mixed-use scheme by undertaking initiatives that encourage local labour recruitment for new employment opportunities at the site.
- 13.6.3 Whilst no specific mitigation measures are required, some further initiatives that could be considered in relation to the construction employment generated by the proposed development include encouraging the use of local supply chains, and where practicable, utilise products and services that are procured locally. These measures would be subject to discussions with Warrington Borough Council, and other bodies involved with education and training, to ensure such employment initiatives are realised in the local context.

Operational Mitigation Measures

Employment and Local Labour Market

13.6.4 The proposed development will give rise to a moderate beneficial impact through the development of additional uses and the creation of 217 net additional FTE jobs locally; the generation of net additional expenditure; and the positive contribution to local authority revenues.

13.6.5 As such, no mitigation measures are required.

Impact on Commuting Patterns

13.6.6 A minor negative impact of the proposed scheme is the potential increase in the level of commuting in the local area. However, the proposed employment generating local facilities within the scheme will help minimise commuting levels overall.

13.6.7 Any remaining adverse impacts can be most easily addressed through suitable s106 contributions by the developer, which could include the provision of a new bus service, which would promote the use of public transport and which would benefit not only the residents moving into the new development, but also the existing residents who live nearby.

13.6.8 In addition to this there are proposals to provide an extensive network of pedestrian and cycle routes within the site and a financial contribution to providing and upgrading facilities outside the site in north Warrington.⁵⁵

13.6.9 These mitigation measures will enable the commuting impacts of the proposed development to be reduced from **adverse**, of **minor** scale, to **neutral**.

Impact on Education Facilities

13.6.10 There currently exists modest capacity in both the primary and secondary education infrastructure, without the proposed Peel Hall development. WBC projections indicate that this capacity will turn into a shortfall of both primary and secondary school places over the course of the build programme if the proposed Peel Hall development is included in the calculations, although the scale of that shortfall is unknown over the full build period.

⁵⁵ 3D Reid (2013) Peel Hall Development Concept Document, 5.2

13.6.11 Land will be made available for a 1FE Primary School as part of the Peel Hall proposals. Any residual shortfall in primary school provision would be mitigated through appropriate Section 106 financial contributions to be agreed in consultation with the Council.

13.6.12 A moderate adverse effect of the proposed development scheme, relating to the shortfall in secondary school provision could give rise to the need for financial contributions from the developer. This could be mitigated through appropriate Section 106 contributions which would be agreed in consultation with the Council.

13.6.13 These mitigation measures will enable the primary/secondary education impacts of the proposed development to be **reduced from adverse, of minor/moderate scale, to neutral**.

Impact on Healthcare Facilities

13.6.14 Because there already exists an over capacity with regard to the number of patients per GP provision at present, the increased healthcare impact resulting from the proposed Peel Hall development is likely to be adverse, but of a minor magnitude given the scale of the increase and the fact that 18 of the 20 practices are still accepting new patients.

13.6.15 The Council are in discussion with Warrington Clinical Care Commissioning Group (CCG) and NHS England regarding future options to expand two of the proposed development's nearest GP Practices, Fearnhead Medical Centre and Padgate Medical Centre⁵⁶. Any remaining adverse impacts can be most easily addressed through suitable s106 contributions by the developer. Space for healthcare uses is able to be created in the local centre if on-site provision is required.

13.6.16 These mitigation measures will enable the impacts of the proposed development on Healthcare Facilities to be **reduced from adverse, of a minor scale, to neutral**.

⁵⁶ WBC (2016) Pell Hall Pre-Application Advice Letter, 26th February 2016

Impact on Open Space and Recreation Facilities

- 13.6.17 The provision of open space will be a Reserved Matter, although it is proposed that the requirement for equipped and informal children's play space and allotments (as set out in Table 13.15) will be provided to the Council policy requirements. A condition will be requested to approve an open space strategy (addressing size, type and location) prior to the Reserve Matter approvals.
- 13.6.18 The natural and semi-natural informal Greenspace requirement will be catered for within the site itself, with a proposed green network through the centre of the site and along the motorway boundary to the north. This will provide informal areas and the potential for allotments, community orchards etc. Within the development land parcels themselves it is also intended that there will be village green areas, play areas and other recreational facilities incidental to the residential element of the proposed development.
- 13.6.19 It is considered that the proposed development will include suitable onsite open space provision and significant improvements to current substandard sports fields to the south-east of Windermere Avenue, at a higher quality than currently exists. It therefore provides adequate mitigation for the increased demand for open space and recreational areas that might arise following occupation of the proposed development.
- 13.6.20 Any remaining adverse impacts can be most easily mitigated through Section 106 financial contributions. These mitigation measures will enable the impacts of the proposed development on Open Space and Recreation facilities to be fully mitigated.

13.7 Residual Effects

Introduction

- 13.7.1 This section considers the residual socio-economic effects of the proposed development, taking into account the baseline position and any necessary mitigation measures. As relatively few mitigation measures are assessed as being necessary for the proposed development scheme, the residual effects are, in most cases, the same as the impacts discussed in earlier sections.

During Construction

- 13.7.2 No significant adverse effects are anticipated during the construction period.

After Completion

- 13.7.3 Following appropriate developer contributions, any negative impacts on Commuting, Education and Healthcare will be effectively neutralised.
- 13.7.4 The scale and significance of these residual impacts (i.e. once the mitigation measures have been implemented) are summarised in Table 13.18.

Table 13.18 Residual Impacts from the Proposed Development at Peel Hall after Mitigation

Socio-Economic Factor	Impact	Magnitude
Construction Employment	Beneficial	Moderate
Operational Employment	Beneficial	Moderate
Resident Expenditure	Beneficial	Moderate
Public Revenue	Beneficial	Moderate
Local Labour Market	Beneficial	Minor
Housing	Beneficial	Moderate
Deprivation	Beneficial	Minor
Commuting	Neutral	-
Primary Education	Neutral	-
Secondary Education	Neutral	-
Healthcare	Neutral	-
Open Space & Recreation	Beneficial	Minor

Source: Lichfields Analysis

13.8 Summary and Conclusions

- 13.8.1 The proposed mixed-use development on land at Peel Hall has the potential to deliver up to 1,200 new dwellings, helping to meet Warrington's housing need. The 30% of dwellings allocated as affordable housing will help to increase the mix of housing available within the Borough and improve resident's access to much needed social housing in the area. The Care Home facilities will bring benefits to the increasing proportion of elderly residents who reside in the Borough. It will also release some existing housing that is currently under-occupied onto the wider market, thereby making more efficient use of the existing housing stock.
- 13.8.2 In addition to this, the development will also have a positive impact on the local economy by creating new construction jobs during the development phase. Moreover, the retail and leisure facilities

contained within the development promise to deliver hundreds of new jobs once the development is operational, both directly through the employers based there but also indirectly through the supply chain. The inclusion of community facilities in the site will also help support the infrastructure needs of local residents.

13.8.3 Based on this assessment, the most significant socio-economic impacts of the proposed development on the local economy are likely to include:

- 1 Investment of approximately £150 million over the 11-year development period;
- 2 Creation of 124 FTE construction jobs over the duration of the development phase;
- 3 Provide 217 FTE net additional jobs generated through the commercial and community uses and Care Home sections of the proposed development;
- 4 Delivery of up to 1,200 new C3 dwellings which will help to meet 6.3% of the housing target for the Borough over the plan period, improve the level of housing choice (by increasing the level of affordable housing) within the local area and reduce affordability issues;
- 5 Provide specially-designed housing for the elderly, alongside creating 53 associated FTE jobs;
- 6 Improve the socio-economic outcomes of highly deprived neighbourhoods in the wider area by offering new employment opportunities; and,
- 7 Improvement of open spaces as part of the development and improvements to existing poor quality sports facilities that will improve the provision of such facilities within the local area.

13.8.4 The scale of increase in the resident population will be relatively minor when viewed in the context of the Borough as a whole. Impacts on demand for education, healthcare, open spaces and community facilities can be addressed by new facilities developed within the scheme, alongside current provisions within the local impact area. The proposed mixed-use scheme represents a significant new capital investment within the local area and will help to raise the overall level of economic activity and expenditure within the local economy.

Abbreviations & Definitions

- 13.8.5 CCG – Clinical Commissioning Group
- 13.8.6 DPD – Development Plan Document
- 13.8.7 ELR – Employment Land Review
- 13.8.8 1FE – 1 Form Entry
- 13.8.9 FiT – Fields in Trust
- 13.8.10 FTE – Full Time Equivalent
- 13.8.11 GDP – General Dental Practitioner
- 13.8.12 GP – General Practitioner
- 13.8.13 GVA – Gross Value Added
- 13.8.14 HCA – Homes and Communities Agency
- 13.8.15 IMD – Index of Multiple Deprivation
- 13.8.16 JSA – Job Seekers Allowance
- 13.8.17 LAP – Local Area for Play
- 13.8.18 LEAP - Locally Equipped Area for Play
- 13.8.19 LQ – Lower Quartile
- 13.8.20 MSOA – Middle Super Output Area
- 13.8.21 NEAP - Neighbourhood Equipped Area for Play
- 13.8.22 NHB – New Homes Bonus
- 13.8.23 NPPF – National Planning Policy Framework
- 13.8.24 ONS – Office for National Statistics
- 13.8.25 OSA – Open Space Audit
- 13.8.26 R&D – Research and Development
- 13.8.27 SFSNA – Sports Facilities Strategic Needs Assessment
- 13.8.28 SNPP – Sub National Population Projections
- 13.8.29 SPD – Supplementary Planning Document
- 13.8.30 WBC – Warrington Borough Council

14.0 CUMULATIVE IMPACTS

Introduction

- 14.1 The Chapter provides a summary of the potential cumulative impacts already described in each technical chapter (Chapters 2-8). It highlights where and how other proposed developments may alter and influence the potential impacts already identified, and attempts to indicate whether these impacts are significant or not so that they may be taken fully into account by the planning determination process. In addition, this chapter considers the combined impact of the construction phase on disruptions to local people and communities.
- 14.2 Regulation 2(1) of the Town and Country Planning (EIA) Regulations 1999 (as amended) emphasises the need for cumulative impacts to be considered at a project level. Cumulative impacts are those new impacts, or enhancements of existing impacts, that occur only because of the interaction of the construction and operation of the proposed development with “other” projects and plans, or from the interaction of different aspects of the proposed scheme. Impacts may occur from the compounding of an issue (e.g. pollution from different sources affecting the same receptor, or different impacts on the life cycle of bats and other fauna) or from changes to the baseline (e.g. future development may change the landscape character and thus the impact of the residential development on the future baseline). Where a particular impact affects different receptors, this is not a cumulative impact but a direct impact which is not considered any further in this Chapter. For example, the adverse impacts from road runoff could have a detrimental impact on both water quality and ecology, as well as contribute to a temporary increase in flood risk by contributing to blockages of small watercourses.

Methodology

- 14.3 A qualitative assessment of the potential cumulative impacts has been undertaken. Good practice guidelines recommend that an EIA should assess the impacts of the development cumulatively with other developments only when there are likely to be significant impacts. When evaluating the potential for significant impacts there is often considerable uncertainty in the assessment. For example, it is possible that other planning applications are made during the determination of this planning application which are therefore not included in this assessment. The combined impacts on specific resources or receptors have been described, where relevant, in each of the specialist Chapters.

Other developments

- 14.4 In order to assess cumulative impacts as a result of proposed development in the vicinity of the proposed development has been determined from the Local Planning Authority. Based on experience in similar schemes, only developments within 5km of the proposed bypass have been considered, as beyond this arbitrary study area cumulative impacts are unlikely to occur (please

note that the study area for each environmental discipline is topic specific and is stated in the methodologies described within each technical Chapter).

- 14.5 Sites under construction are believed to be finalised by the time the construction phase for the proposed development begins. Hence, these may only have a cumulative impact during the operational phase. Sites currently under construction include residential and employment developments. Proposed developments that have been approved or are likely to be approved (i.e. applications awaiting decision, allocated sites, growth point sites and Strategic Housing Availability Assessment (SHAA) sites) can potentially have cumulative impacts with the proposed residential area during construction and operation. These include employment, residential and retail developments. It is accepted that any proposed developments, identified as part of this assessment are likely to alter traffic flows.

Ecology and Nature Conservation

- 14.6 Cumulative impacts will only occur during the construction phase if the construction of nearby projects coincides with that of the proposed residential development.
- 14.7 If any future development is brought forward it is assumed that appropriate surveys and assessment will be carried out, in consultation with environmental regulators, and mitigation will be included where relevant. For the Peel Hall development it is assessed that there will be no cumulative effects due largely to the barrier effect of the motorway corridor from habitats to the north.

Hydrology, Drainage and Flood Risk

- 14.8 Cumulative impacts will only occur during the construction phase if the construction of nearby projects coincides with that of the proposed residential development.
- 14.9 Providing adequate mitigation is in place no significant impacts are anticipated.

Landscape and Visual Impact

- 14.10 Cumulative impacts will only occur during the construction phase if the construction of nearby projects coincides with that of the proposed residential development. There are no other proposed developments adjacent to the site or within the zone of visual impact that would lead to a cumulative impact arising.
- 14.11 Land to the north beyond the motorway is green belt land with no major constraints on development. Land to the east, west and south is existing residential development. The new proposed development and its screening with additional landscape would obscure the existing development from any views such as public rights of way. Providing adequate mitigation is proposed and implemented there would not be any overall significant impact in landscape character and/ or visual terms.

Transport and Highways

- 14.12 Cumulative impacts are only likely to occur if the construction of projects within north Warrington coincides with that of the proposed residential development.
- 14.13 Traffic volumes and the use of the road network has been assessed within the TA Addendum. It is shown that with mitigation (bus service provision, Travel Plan measures, and highway engineering works) the development traffic can be accommodated on the highway network. No adverse cumulative impacts are expected.

Archaeology and Cultural Heritage

- 14.14 Cumulative impacts will only occur during the construction phase if the construction of nearby projects impacts directly with that of the proposed residential development.
- 14.15 Providing adequate mitigation is in place, cumulative impacts are not considered to be significant as there are no known development directly affecting the proposals.

Noise

- 14.15 The cumulative impacts of road traffic associated with the Proposed Development and other concurrent projects within the vicinity of the has been considered within the assessment within Chapter 11.0

Air Quality

- 14.16 The cumulative impacts of road traffic associated with the Proposed Development and other concurrent projects within the vicinity of the has been considered within the assessment within Chapter 12.0

Socio-Economic

- 14.18 Cumulative impacts will only occur during the operational phase if the construction of nearby projects impacts directly with that of the proposed residential development.
- 14.19 Social infrastructure during the construction phase may have a beneficial impact on existing local communities in terms of providing employment opportunities. Increased populations within the operational phase may have cumulative impacts on healthcare provision, education provision. Recreational opportunities are to be off-set by new and enhanced provision and/ or by commuted sum arrangement with the Local Planning Authority.

Significance of Cumulative Impacts

- 14.20 It is predicted that there are no significant cumulative impacts on ecology, hydrology, landscape and visual, highways and transport, archaeology, noise and air quality and socio-economic issues. In some cases implementation of good practice mitigation is required.

15.0 SUMMARY OF ADVERSE IMPACT AND MITIGATION SUMMARY OF PREDICTED RESIDUAL EFFECTS

15.1 Replace table 15.2 and 15.3 as set out below:

**Table 15.2: Summary of Impacts and Mitigation
Temporary- Construction Phase**

Environmental Topic	Significance of Effect		Proposed Mitigation	Significance of Residual Effect	
	Major, Moderate, Minor, Negligible	Adverse, Beneficial, Neutral		Major, Moderate, Minor, Negligible	Adverse, Beneficial, Neutral
Landscape & Visual Amenity					
Visual impact and loss of amenity to users of the sports pitches/ recreational area due to construction operations	Moderate	Adverse	Provision of new sports pitches and recreational areas prior to loss of existing facilities.	Minor	Adverse
Change in character of an open landscape to construction site	Moderate	Adverse	Elements of existing vegetation will be retained and enhanced to provide setting and assimilate the proposed development into the surrounding landscape, by the use of advanced planting in line with the phasing of the development.	Minor	Neutral
Impact on limited number of local residents who currently have unrestricted views of the site due to construction operations	Minor-Moderate	Adverse	Proposed landscape masterplan will inform the detail of development to provide screening for adjacent residents.	Minor	Adverse
Impact on users of the public footpath to the north east of the site due to construction operations	Major	Adverse	Footpath routed retained on existing route and protected.	Moderate	Adverse
Impact on existing habitats- stream courses, existing woodland, hedgerows etc.	Minor	Adverse	Stream courses retained, new ponds created with habitat enhancement. Existing features protected with barrier fencing etc.	Negligible	Adverse
Highways & Transportation					
Loss of amenity for existing users of the public right of way network	Minor	Adverse	Construction Management Plan to include information on diversions of PRow where necessary.	Minor	Adverse

Construction operations will result in HGV traffic which could cause congestion and loss of amenity to local residents.	Moderate-Major	Adverse	Have a Construction Management Plan that controls hours of site operation and HGV routes to and from the site.	Minor	Adverse
Hydrology, Flood Risk & Drainage					
Potential contaminants or particulates seeping into the groundwater and / or river courses.	Minor	Adverse	Construction Management Plan will be in place to control and reduce impact on watercourse.	Negligible	Adverse
Ecology & Nature Conservation					
Disturbance to Radley Plantation and Pond Local Wildlife Site & Removal of woodland edge buffer habitats	Moderate	Adverse	No built development within 15 metres of woodland. No residential curtilage within 25 metres of LWS. 10-20metre buffer zone of habitat creation around northern perimeter of LWS including pond creation. Construction Environmental Management Plan to ensure protection of all retained habitats at risk from disturbance during site works.	Minor	Adverse
Loss of large areas of derelict agricultural land dominated by coarse grassland with general low floristic values.	Moderate	Adverse	14.6ha of habitat creation on site including species-rich grassland, scrub, wetland and woodland creation & invasive species removal. Construction Environmental Management Plan to ensure protection of all retained habitats at risk from disturbance during site works.	Moderate	Adverse
Loss of areas of immature plantation woodland <30 years old.	Moderate	Adverse	Habitat creation on site to include minimum 3.3ha woodland creation. Enhancement and protection of retained woodland.	Minor	Adverse
Loss of pond habitat	Minor	Adverse	Three new ponds (separate from SUDS systems) to be created on site. Enhancement of two retained ponds.	Non-significant	Non-significant
Road construction over stream and ditch habitats	Minor	Adverse	10m buffer zones either side of Spa Brook and ditches. Habitat enhancement of stream corridor. Construction Environmental Management Plan to ensure protection of watercourses from pollution/siltation.	Non-significant	Non-significant

Loss of minor sections of species-poor hedgerows.	Minor	Adverse	Boundary hedgerows to be planted & retained hedgerow habitat to be protected by buffer zones and enhanced.	Non-significant	Non-significant
Loss of areas of secondary dry reed bed on derelict farmland.	Minor	Adverse	Provision of wetland habitat at attenuation ponds & SUDS.	Minor	Adverse
Road construction over potential water vole habitat	Not known (access constraints)	Not known (access constraints)	Precautionary working method statement, 10 metre buffer zones of habitat creation and enhancement along wet ditches and streams.	Not known	Not known
Loss of potential roosting habitat	Not known (access constraints)	Not known (access constraints)	Bat roost surveys required on unassessed buildings.	Not known	Not known
Loss, reduction and/or alteration of bat foraging habitat.	Moderate	Adverse	Corridors of habitat creation and 10m buffer zones of unlit habitats along key habitat features.	Minor	Adverse
Loss/fragmentation of hedgehog & polecat habitat.	Minor	Adverse	Sensitive site clearance methodologies and habitat retention/creation.	Non-significant	Non-significant
Loss of great crested newt breeding pond & terrestrial habitats	Minor	Adverse	Amphibian translocation and habitat creation under EPSM licence.	Non-significant	Non-significant
Loss of nesting bird habitat.	Moderate	Adverse	Sensitive timing of vegetation removal. 14.6ha of habitat creation and/or enhancement on site to include woodland, hedgerows and ponds.	Moderate	Adverse
Loss of large areas of semi-natural habitat of value to common invertebrate assemblages	Minor	Adverse	14.6ha of invertebrate attracting habitat creation and/or enhancement on site to include woodland, hedgerows and ponds.	Non-significant	Non-significant
Impacts on barn owl & badgers	Not applicable	Not applicable	No mitigation required. Precautionary pre-commencement updated survey.	Not applicable	Not applicable
Air Quality					
Increases in dust and particles due to construction, earthworks, trackout and demolition	Minor	Adverse	Implementation of a Dust Management Plan to reduce the likelihood of dust escaping beyond the boundary of the proposed development site.	Negligible	Adverse
Cultural Heritage & Archaeology					
Direct physical impact to archaeological remains	Minor	Adverse	Archaeological excavation and/or watching brief on areas where the presence or likely presence	Negligible	Adverse

leading to partial or total loss of an archaeological asset			of archaeological remains is coincident with ground works required for the proposed development. Any archaeological attendances would be followed by analysis of the findings, publication and dissemination of the results and deposition of the archive in line with archaeological practice. The archaeological attendances would be configured with reference to the standards and guidance published by the Chartered Institute for Archaeologists with a contingency to respond to findings.		
Noise & Vibration					
Increase in noise level from construction noise	Minor-Moderate	Adverse	Implementation of Best Practicable Means and restrictions in working hours to ensure minimal disruption	Minor	Adverse
Increase in noise from plant	Minor-Moderate	Adverse	Ensure that a detailed assessment of potential plant noise is carried out when the need for plant is identified	Minor	Adverse
Socio-Economics					
Employment Resulting from the construction phase	Moderate	Beneficial	-	Moderate	Beneficial
Recreation					
Loss of Mill Lane Sport Pitches	Moderate-Major	Adverse	-	Moderate-Major	Adverse
Peel Cottage Lane PROW	Major	Adverse	-	Major	Adverse

Table 15.3: Summary of Impacts and Mitigation
Permanent- Operational Phase

Environmental Topic	Significance of Effect		Proposed Mitigation	Significance of Residual Effect	
	Major, Moderate, Minor, Negligible	Adverse, Beneficial, Neutral		Major, Moderate, Minor, Negligible	Adverse, Beneficial, Neutral
Landscape & Visual Amenity					
Visual impact and loss of amenity to users of the sports pitches/ recreational area.	Moderate	Adverse	Provision of new sports pitches and recreational areas prior to loss of existing facilities.	Minor	Adverse
Change in character of an open landscape to residential development, industrial uses and infrastructure	Negligible	Adverse	Change in character inevitable but will be in keeping with development to the south. Mitigated by good design and landscape treatment. Elements of existing vegetation will be retained and enhanced to provide setting and assimilate the proposed development into the surrounding landscape.	Negligible	Neutral
Impact on limited number of local residents who currently have unrestricted views of the site	Moderate	Adverse	Proposed landscape masterplan will inform the detail of development to provide screening for adjacent residents.	Minor	Adverse
Impact on users of the public footpath to the north east of the site	Major	Adverse	Footpath routed retained on existing route and screened from adjacent development, new pedestrian routes created through the site, linking areas of existing and proposed open space.	Moderate	Adverse
Impact on existing habitats- stream courses, existing woodland, hedgerows etc.	Minor	Adverse	Stream courses retained, new ponds created with habitat enhancement.	Negligible	Adverse
Highways & Transportation					
Development traffic will cause congestion.	Moderate- Major	Adverse	Introduce new extended bus services into the site; Travel Plan measures to reduce congestion and encourage healthier travel choices; highway engineering works to mitigate the effect of development traffic at specific locations.	Moderate-Major	Beneficial

Loss of amenity for existing users of the public right of way network	Negligible	Adverse	Proposed to have extensive footway and cycleway network through the developed site.	Moderate	Beneficial
Hydrology, Flood Risk & Drainage					
Loss of permeable greenfield land	Negligible	Adverse	Surface water is proposed to be controlled through attenuation features across the site, limiting the flow of water from the site to the existing run-off rates	Minor	Beneficial
Potential contaminants or particulates seeping into the groundwater and / or river courses.	Negligible	Adverse	Lined permeable paving and attenuation features provide a two stage filtering process across the site, removing and containing any contaminants or particulates.	Minor	Beneficial
Ecology & Nature Conservation					
Public disturbance to Radley Plantation and Pond Local Wildlife Site	Negligible	Adverse	Woodland enhancement and public awareness	Minor	Beneficial
Public disturbance to retained & created woodland	Negligible	Adverse	Woodland enhancement through management. Proposed layout to ensure no rear gardens adjacent to woodland edges.	Non-significant	Non-significant
Pollution & disturbance of retained & created ponds	Minor	Adverse	SUDS system to prevent any pollution/siltation of waterbodies. Walkway barriers and information boards around ponds.	Non-significant	Non-significant
Road use over stream and ditch habitats	Minor	Adverse	Drainage design to prevent any pollution/siltation of watercourse	Non-significant	Non-significant
Impacts to reed bed, grassland, scrub, ruderal & fern.	No operational effects	Not applicable	Any losses have occurred during the construction phase. No operational effects predicted	No operational effects	Not applicable
Road usage over potential water vole habitat	Not known (access constraints)	Not known (access constraints)	10 metre buffer protection zones to be maintained along Spa Brook & Ditch 1. SUDS system to prevent any pollution/siltation of watercourse	Non-significant	Non-significant
Impact on invertebrates & bat foraging areas through the site lighting.	Moderate	Adverse	Unlit buffer zones along key habitat features & overall sensitive lighting design.	Minor	Adverse

Fragmentation of hedgehog & polecat habitat by garden fences and roads.	Minor	Adverse	Wildlife underpasses suitable for small mammals/herptiles and garden fence design.	Non-significant	Non-significant
Pollution of amphibian ponds & increased public disturbance. Roads present permanent amphibian dispersal barriers.	Minor	Adverse	Permanent GCN fencing along link road between ponds, amphibian underpasses at key locations & pond protection.	Non-significant	Non-significant
Disturbance to nesting birds by increased pedestrian use of site and general development.	Minor	Adverse	Walkways outside of any vegetation buffer zones with barriers.	Non-significant	Non-significant
Air Quality					
Increases in concentrations of NO ₂ , PM ₁₀ and PM _{2.5} from increased traffic flows	Negligible	Adverse	-	Negligible	Adverse
Cultural Heritage & Archaeology					
Indirect impact on the setting of an archaeological or cultural heritage asset leading to a diminution of its significance	Negligible-Minor	Adverse	For those archaeological and cultural heritage assets for which an indirect impact to setting has been predicted no formal mitigation is recommended as the magnitude of the impacts to settings and significance of the effect is marginally adverse and there is inherent mitigation in the quality of the design and layout of the proposed development.	Negligible	Adverse
Noise & Vibration					
Noise levels in proposed habitable rooms	Major	Adverse	Appropriate design of site using principals of good acoustic design. Suitable façade mitigation in terms of construction, glazing and ventilation.	Minor	Adverse
Change in noise levels due to road traffic	Moderate	Adverse	Use of a landscaped area to include a 2.0m barrier to the north of a new entrance road off Mill Lane.	Minor	Adverse
Socio-Economics					

Operational Employment	Moderate	Beneficial	-	Moderate	Beneficial
Resident Expenditure	Moderate	Beneficial	-	Moderate	Beneficial
Public Revenue	Moderate	Beneficial	-	Moderate	Beneficial
Local Labour Market	Minor	Beneficial	-	Minor	Beneficial
Housing	Moderate	Beneficial	-	Moderate	Beneficial
Deprivation	Minor	Beneficial	-	Minor	Beneficial
Commuting: Increase in the level of commuting within the local area.	Minor	Adverse	Commuting: Retail / leisure / community floorspace within the proposed development will help minimise net out commuting levels overall. Any remaining adverse impacts can be addressed through suitable planning conditions.	-	Neutral
Primary Education: Increased demand for primary school places, which are operating close to capacity.	Minor	Adverse	Primary Education: land will be made available for a 1FE Primary School as part of the Peel Hall proposals. Any residual shortfall in primary school provision would be mitigated through appropriate Section 106 financial contributions.	-	Neutral
Secondary Education: Increased demand for secondary school places, which are operating close to capacity.	Moderate	Adverse	Secondary Education: Appropriate Section 106 contributions.	-	Neutral
Healthcare: Increased demand for healthcare facilities, which are operating close to capacity.	Minor	Adverse	Healthcare: Appropriate Section 106 contributions or the availability of space within the local centre	-	Neutral
Open Space & Recreation: Increased demand for open space and recreational facilities.	Minor	Adverse	Open Space & Recreation: The proposed development will include suitable onsite open space provision and significant improvements to current substandard sports fields to the south-east of Windermere Avenue, at a higher quality than currently exists. It therefore provides adequate mitigation for the increased demand for open space and recreational areas that might arise following occupation of the proposed development. Any remaining adverse impacts	Minor	Beneficial

			can be most easily mitigated through Section 106 financial contributions.		
Recreation					
Loss of Mill Lane Sport Pitches	Minor	Adverse	Replacement sports pitches of better quality and quantity with supporting amenities including changing facilities.	Minor-Moderate	Beneficial
Peel Cottage Lane PROW	Major	Adverse	Footpath route to remain. Landscape planting will reduce impact on footpath over time.	Moderate	Adverse

16.0 CONCLUSIONS

16.1 In summary the following topic areas have been addressed and the findings are set out below:

- Planning Policy - Overall the proposed development complies with relevant national and development plan policies. It aids the fulfilment of objectives and strategies within non-statutory assessments such as the provision of market and affordable housing, local employment and crating investment. The “tilted balance” applies
- Ecology and Nature Conservation - There will be no direct effects on Radley Plantation and Pond LWS, however current semi-natural habitats within the application site that directly abut the LWS woodland edge will be partially displaced by proposed playing fields, resulting in a slight potential impact to woodland structure. The Woodland Trust and County Ecologist/Consulting Body will be consulted as part of the planning process to further assess the potential impacts of proposals on Radley Plantation and Pond LWS.
- The evaluation of predicted effects has shown that a Moderate Adverse effect is predicted on the site as a whole through the loss of common but extensive semi-natural habitats during construction. These effects are partially reversible through the enhancement of retained habitats and provision of new habitats.
- Critical to a moderate adverse effect being predicted, is the overall low diversity and rankness of the plant communities on site, and the artificial nature of the woodlands effected by proposals. Whilst the site is large and losses extensive and of very high magnitude, the individual habitats affected are essentially poor. Extensive habitat degradation in the form of fly tipping and invasive species further reduces the ecological value of the site.
- Faunal species/species groups of conservation concern recorded on site include foraging bats, breeding birds and a small population of breeding great crested newts.
- Mitigation and precautionary method statements are provided for roosting and foraging bats, breeding birds, water vole, great crested newt and hedgehog.
- Species for which on-site mitigation is not possible include skylark and noctule bat, which are likely to be displaced to surrounding open agricultural land.
- A minimum of an internal inspection of the four buildings on/connected to the site that could not be accessed must be undertaken prior to any works commencing.

- GCN survey data must be no more than two years old in order to apply for a GCN licence. It would be prudent to include ponds within Peel Park within any future survey work to fully establish the population status of GCN.
- Hydrology, Drainage and Flood Risk - It is concluded that the development is not at risk of fluvial, tidal, overland groundwater flooding and will not increase flooding to surrounding areas.
- Landscape and Visual Impact - Subject to the mitigation proposals there would not be any overall significant adverse impact in landscape, character or visual terms.
- Transportation and Highways – With mitigation, the predicted impact to the wider highway network is expected to be moderate beneficial, with a high level of provision for public transport, cyclists and pedestrians.
- Cultural Heritage and Archaeology - The mitigation measures and advancement of understanding compensates for the loss of any cultural, heritage and archaeological assets. With regard to the assessment site the investigation and recording of any cultural assets would lead to an overall residual slight adverse/neutral impact for all directly impacted assets.
- Noise - The proposals meet both IEMA and British Standards for sound insulation and noise reduction for buildings. It is considered that the proposed development adheres to the principles of paragraph 109 of the NPPF and 'will not put at risk from or being adversely affected by unacceptable levels of soil, air, water or noise pollution.' It is considered that noise and vibration should not be a constraint on residential amenity.
- Air Quality - It is considered that the proposed development adheres to paragraph 170 of the NPPF and does not adversely affect existing or new development by reason of unacceptable levels of air pollution. It is considered that air pollution should not be a constraint on the proposed residential development.
- Social Infrastructure - The scale of housing and its associated increase in residential population will be relatively minor when viewed in the context of the Borough as a whole. The proposed mixed- use scheme represents a significant new capital investment within the local area and this will help raise the overall level of economic activity and expenditure within the local economy.

16.2 The overall conclusion of this addendum to the environmental statement is that any impact that occurs as the result of the scheme can be successfully mitigated and that all mitigation matters can be conditioned as part of reserved matters planning applications.

PART 3 GENERAL CONCLUSION

17.0 GENERAL CONCLUSIONS

- 17.1 Since the preparation of the Environmental Statement and Addendum 1 for the proposed development at Peel Hall, a review of traffic, noise and air quality data has been carried out which might have affected the assumptions made in respect of likely impacts as set out in the original document and addendum 1. Updated ecology surveys have also been undertaken. As the result of this the ES Chapters dealing with Highways and Transportation, Noise, Air Quality and Ecology have been revised. The submitted layout has been re-assessed based on the new data and updated accordingly.
- 17.1 The addendum 2 serves to provide clarification, updated surveys and additional information as part of the reopened inquiry.
- 17.2 The overall conclusion of this study is that the scheme could be implemented without causing significant adverse environmental effects.