Environmental Statement Addendum (ESA) – Volume 1

Keyland

Redevelopment of Former North Bierley WWTW

November 2017

Turley

Contents

This Environmental Statement Addendum (ESA) is accompanied by Technical Appendices – Volume 2 and a Non-Technical Summary.

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Tables

Figures

ABBREVIATIONS

AADT	Annual Average Daily Total flow
AOD	Above Ordnance Datum
BAP	Biodiversity Action Plan
BBS	Breeding Bird Survey
BEMP	Biodiversity Ecology Management Plan
BGS	British Geological Society
BMDC	Bradford Metropolitan District Council
CEMP	Construction Environmental Management Plan
DEFRA	Department of Environment Food and Rural Affairs
DFT	Department for Transport
DMRB	Design Manual for Roads and Bridges
EA	Environmental Agency
EC	European Commission
EcIA	Ecological Impact Assessment
EIA	Environmental Impact Assessment
ELC	European Landscape Convention
ES	Environmental Statement
ESA	Environmental Statement Addendum
EU	European Union
FRA	Flood Risk Assessment
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GQRA	Generic Quantitative Risk Assessment
HA	Highways Agency
HCA	Homes and Communities Agency
HDV	Heavy Duty Vehicle

IEEM	Institute of Ecology and Environmental Managment
JNCC	Joint Nature Conservation Committee
km	Kilometres
km/hr	Kilometres per hour
KMBC	Kirklees Metropolitan Borough Council
LAQM	Local Air Quality Management
LCA	Landscape Character Area
LCT	Landscape Character Types
LDV	Light Duty Vehicle
LDF	Local Development Framework
LNR	Local Nature Reserve
LVIA	Landscape and Visual Impact Assessment
mg/m^3	Milligrams (of pollutant) per cubic meter (of air)
m	Metres
mm	Millimetres
NBN	National Biodiversity Network
NCA	National Character Areas
NCN	National Cycle Network
NPPF	National Planning Policy Framework
NRTF	National Road Traffic Forecast
NTS	Non Technical Summary
NVC	National Vegetation Classification
ODPM	Office of Deputy Prime Minister
ONS	Office for National Statistics
OS	Ordnance Survey
PRoW	Public Right of Way

RSPB	Royal Society for the Protection of Birds
SAC	Special Areas of Conservation
SCOPSA	Standing Conference of South Pennines Authorities
SFRA	Strategic Flood Risk Assessment
SPA	Special Protection Areas
SPD	Supplementary Planning Document
SSSI	Sits of Special Scientific Interest
SUDS	Sustainable Urban Drainage System
TA	Transport Assessment
TG	Technical Guidance
UDP	Unitary Development Plan
UKAS	United Kingdom Accreditation Service
UKBAP	UK Biodiversity Action Plan
VER	Valued Ecological Receptors
VP	Viewpoint
WwTW	Wastewater Treatment Works
ZTV	Zone of Theoretical Visibility
ZVI	Zone of Visual Interest

GLOSSARY

Term	Meaning Adopted in this Assessment
Annual average daily total flows	A daily traffic flow (24hrs), expressed as a mean daily flow across all 365 days of the year (AADT) in units of vehicles per hour
Baseline scenario	Scenarios with the proposed development/project not in operation
Construction Environmental Management Plan	A framework developed to address and manage the environmental aspects and impacts related to the construction of the proposed development/project
DMRB screening tool	An empirical computer modelling tool that predicts future air quality levels as a result of road traffic characteristics under different scenarios
Heavy Duty Vehicle	A vehicle type classification, including rigid and articulated heavy goods vehicles, plus buses and coaches, that is used by air quality dispersion models
	A vehicle type classification, including motorcycles, cars and light goods vehicles, that is used by air quality dispersion models
Light Duty Vehicle / Road links	Individual sections of the road network, usually divided by junctions, used in the modelling of scenarios
24 hour mean concentration	The average (mean) of the hourly pollutant concentrations measured or predicted for 24 consecutive hours in one day
Landscape and Visual Impact Assessment (LVIA)	A tool used to identify and asses the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.
Landscape Character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one

	landscape different from another, rather than better or worse.
Landscape Character Areas (LCAs)	These are single unique areas which are the discrete geographic areas of a particular landscape type.
Landscape Character Assessment (LCA)	The process of identifying and describing variation in the character of the landscape, and using this information to assist in managing change in the landscape. It seeks to identify and explain the unique combination of elements and features that make landscape distinctive. The process results in the production of a Landscape Character Assessment.
Landscape Character Types (LCTs)	These are distinct types of landscape that are relatively homogenous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern, and perceptual and aesthetic attributes.
Landscape Effects	Effects on the landscape as a resource in its own right.
Landscape Quality (condition)	A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.
Landscape Receptors	Defined aspects of the landscape resource that have the potential to be affected by a proposal.
Landscape Value	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons.
Magnitude (of effect)	A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration.

Photomontage	A visualisation which superimposes an image of a proposed development upon a photograph or series of photographs.
Sensitivity	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value related to that receptor.
Significance –	A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic.
Visual Amenity	The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area.
Visual Effects	Effects on specific views and on the general visual amenity experienced by people.
Visual Receptors	Individuals and /or defined groups of people who have the potential to be affected by a proposal.
Visualisation	A computer simulation, photomontage or other technique illustrating the predicted appearance of a development.
Zone of Theoretical Visibility (ZTV, sometimes Zone of Visual Influence)	A map, usually digitally produced, showing areas of land within which a development is theoretically visible.

A1 Introduction

A1.1 Keyland ("the applicant) has applied for planning permission (LPA ref 2016/60/92298/E and 16/06164/MAO) to Kirklees Council ("KMBC") and Bradford Council ("BDMC") respectively, to redevelop the former North Bierley Waste Water Treatment Works (WWTW) and adjacent agricultural land for employment and residential purposes with associated access and landscaping and provide a new car park for Woodlands Church of England School.

A1.2 Following feedback during the planning application process, the Proposed Development description is amended to remove residential development, as follows:

"Re-development of former waste water treatment works following demolition of existing structures to provide employment uses (Use Classes B1(c), B2 and B8) on land off Cliff Hollins Lane and provision of a school car park for Woodlands Primary School on land off Mill Carr Hill Road (outline application – all matters reserved)"

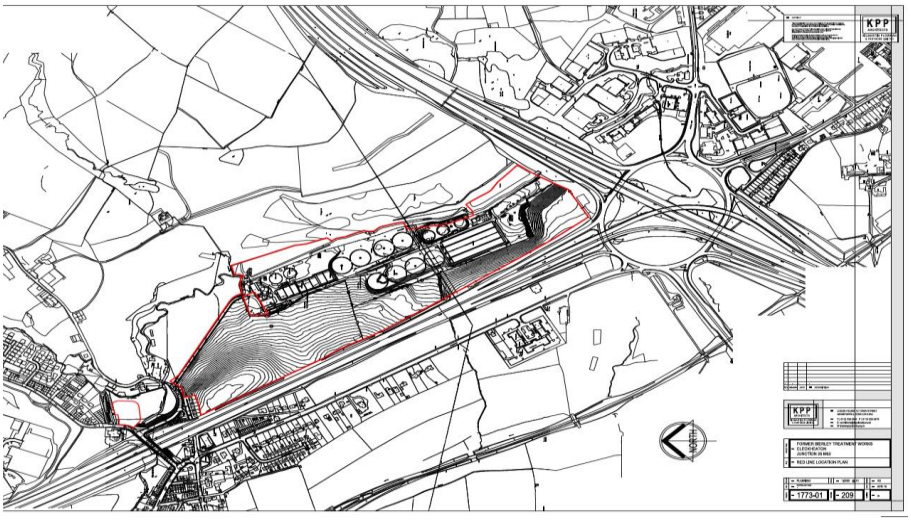

Figure A1.0: Site boundary outlined in red.

A1.3 This planning application site boundary primarily lies within the administrative area of KMBC, with the area for the new school car park lying with the administrative area of BDMC. As a consequence, the planning application and accompanying Environmental Statement (**Addendum Technical Appendix A1.0 and A1.1**) was submitted to both KMBC and BDMC in July 2016.

A1.4 This Environmental Statement Addendum (ESA) has been prepared for the following reasons:

- Further environmental information: During the course of the planning application consideration, feedback has been received from the highways departments at KMBC and BDMC, the environmental health officer at KMBC and the Highways England. Further environmental information has been prepared in response to the feedback provided and is included in this Environmental Statement Addendum.

- Revised Proposals: Since the application was submitted in July 2016, Highways England has indicated that additional land to that allowed for in the parameters plan may be required to deliver improvements to the Chainbar roundabout (Junction 26 of the M62). Highways England is not yet able to advise which options are being considered, and therefore the proposed development has been revised. In particular, the revised proposals: remove an area of land to the south from the developable area, provides land to the west for potential improvements to the M606; removes residential development from the scheme; and revises the building plateaus. New parameter plan and plateau plan have been prepared and are provided in **Addendum Technical Appendix A1.2**. The original development proposal considered in the July 2016 ES no longer forms the proposed development.

A1.5 This ESA Chapter replaces Chapter 1 of the July 2016 ES in its entirety, and has been prepared by Turley.

Reasons for EIA

A1.6 The original ES was prepared under EC Directive 2011/92/EU which was transposed into UK law through the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 [Ref A1.1] as amended, in 2015 [Ref A1.2].

A1.7 Since the July 2016 ES was prepared the Government has enacted the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 ("2017 EIA Regulations") [Ref A1.3]. These Regulations came into force on the 16th May 2017, and in the majority of instances revoke the preceding 2011 Regulations as amended in 2015. This Environmental Statement Addendum (ESA) has been prepared in accordance with the 2017 EIA Regulations.

A1.8 EIA has been undertaken voluntarily by the Applicant. This is on the basis that the applicant considers the Proposed Developments is an urban development project which constitutes EIA Development under Schedule 2 Part 10b of the EIA Regulations due to its size, scale and nature. Consideration has been given to the reduced threshold for industrial development and criteria for such development in the 2017 EIA Regulations.

A1.9 The Applicant has not submitted a "Screening Opinion Request" or "Scoping Opinion Request" to the Council.

A1.10 The scope of this ESA is considered further in Chapter 2A, Approach to EIA.

A1.11 Consequently, the prescribed EIA information including describing the Proposed Development, the likely significant environmental effects (during construction and operation) and the proposed ways to prevent, reduce and offset any significant adverse effects on the environment, known as mitigation measures, has been gathered and is presented in the July 2016 ES and, has been reviewed and updated as necessary in this ESA .

Structure of the ESA

A1.12 The ESA is provided in three parts:

Non-technical summary (NTS)

Volume 1: Main text and figures;

Volume 2: Addendum Technical Appendices

A1.13 The ESA should also be read alongside the documents submitted with the planning application (detailed in paragraph A1.22 below).

The ESA – Non-Technical Summary

A1.14 A non-technical summary (NTS) has been produced as a freestanding document. The NTS provides a concise summary of the whole ESA in non-technical language to be understood by a lay audience.

The ESA Volume 1 – main body

A1.15 This is the full text of the ES and comprises a total of 15 chapters which are illustrated throughout by a series of tables and figures. It presents details required by the EIA Regulations and it is supported by Volume 2.

A1.16 The 2017 EIA Regulations (Schedule 4) identifies a requirement for the Application to include in an ES information that is:

"*reasonably required to assess the environmental effects of the development and which the application can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile*."

A1.17 The list of requirements in the 2017 EIA Regulations is a combination of the previous requirements set out in Part 1 and Part 2 of Schedule 4, and expanded requirements (specifying what issues to be considered under certain topics) and new requirements (such as impact on human health).

A1.18 An outline of what this information comprises in respect of the Proposed Development and where it can be found in the ESA is presented in **Table A1.0**.

Table A1.0: Structure and content of ESA – Schedule 4 of 2017 EIA regulations

Specified Information		Location in ES
1. Description of development including in particular:	a) a description of the location development	Chapter 3 Existing Site and Surroundings July 2016 ES

Specified Information		Location in ES
	b) A description of the physical characteristics of the whole development, including where relevant, requisite demolition works, and the land use requirements during the construction and operational phases.	Chapter 3 Existing Site and Surroundings July 2016 ES; Chapter A4 The Proposed Development ESA 2017
	c) A description of the main characteristics of the operational phase of development (in particular any production process), for instance energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;	Chapter A4 The Proposed Development ESA 2017 and technical chapters so far as relevant to the assessment of significant environmental effects.
	d) An estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, and quantities and types of waste produced during the construction and operation phases.	Chapter A4 The Proposed Development and all technical chapters so far are relevant to the assessment of significant environmental effects.
2. A description of the main alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.		Chapter 5 Consideration of Alternatives July 2016 ES and Chapter A5 Consideration of Alternatives ESA 2017.

Specified Information		Location in ES
3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.		Technical chapters 6-13 of the July 2016 ES; and technical chapters A6-A13 of the ESA 2017, as relevant.
4. A description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora),land (for example land take),soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example (greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.,		Technical chapters 6-13 of the July 2016 ES; and technical chapters A6-A13 of the ESA 2017, as relevant.
5 A description of the likely significant effects of the development on the environment resulting from inter alia:	a) the construction and existence of the development including, where relevant, demolition works;	Chapter A4 Proposed Development ESA 2017 technical chapters 6-13 of the July 2016 ES; and technical chapters A6-A13 of the ESA 2017

Specified Information		Location in ES
	b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;	Chapter A4 The Proposed Development ESA 2017, technical chapters 6-13 July 2016 ES and chapters A6-A13 ESA 2017, as relevant.
	c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste	Chapter A4 The Proposed Development ESA 2017, technical chapters 12 and 13 July 2016 ES; and chapters A12 and A13 of the ESA 2017, as relevant.
	d) the risk to human health, cultural heritage or the environment (for example due to accidents or disasters);	Chapter A2 Approach to EIA and A4 The Proposed Development; technical chapters A7-A13 of the ESA 2017
	e) the cumulative effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of material resources;	Technical chapters 6-13 July 2016 ES; chapters A6- A13 of the ESA 2017, as relevant; and A15 Summary of Interactive and Cumulative Effects of the ESA 2017
	f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;	Chapter A4 The Proposed Development ESA 2017; technical chapters 12 and 13 July 2016 ES; and technical chapters A6-A13 of ESA 2017 as relevant.
	g) the technologies and substances used	Chapter A4 The Proposed Development ESA 2017

Specified Information	Location in ES
6. A description of the forecasting methods or evidence used to identify and assess significant effects on the environmental, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	All technical chapters (6-13) of the July 2016 ES, as relevant; and technical chapters A6-A13 of ESA 2017, as relevant.
7. A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment, and where appropriate, of any proposed monitoring arrangements (for examples the preparation of post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	All technical chapters (6-13) of the July 2016 ES; and technical chapters A6-A13 of ESA 2017 as relevant, and Chapter A15 Summary of Residual Effects and Mitigation ESA 2017
8. A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters, which are relevant to the project concerned.	Chapter A2 The Approach to EIA and Chapter A4 The Proposed Development ESA 2017.
9. A non-technical summary of the information provided under paragraphs 1 to 5 of this Part.	ESA Non-Technical Summary (separate document)

Specified Information	Location in ES
10 A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.	All technical chapters 6-13 July 2016 as identified and technical chapters A6-A13 of the ESA 2017,

The structure of the ES includes the following Chapters which set the context to the scheme, including:

- Chapter A1 Introduction.
- Chapter A2 Approach to EIA
- Chapter A3 Existing Site and Surroundings – July 2016 ES extant in full
- Chapter A4 The Proposed Development – July 2016 ES replaced in its entirety
- Chapter A5 Consideration of Alternatives - July 2016 ES extant in full

Chapters A6-13 provide an assessment of the environmental effects on a topic by topic basis as follows:

- Chapter A6 Socio-economic
- Chapter A7 Landscape and Visual - July 2016 ES replaced in its entirety
- Chapter A8 Ground conditions
- Chapter A9 Ecology
- Chapter A10 Flood Risk and Drainage
- Chapter A11 Transportation
- Chapter A12 Noise and Vibration
- Chapter A13 Air Quality - July 2016 ES replaced in its entirety

A1.19 In addition, the ESA includes the following Chapters:

- Chapter A14 Residual Interrelated and Cumulative Effects
- Chapter A15 Summary of Residual Effects - July 2016 ES replaced in its entirety

A1.20 Figures are provided either within each chapter, or where there are a large number as an Addendum Technical Appendix, as relevant.

The ESA Volume 2 – Addendum Technical Appendices

A1.21 A complete set of technical appendices is provided for reference to prevent the main parts of the ESA becoming excessively long.

Application documents

A1.22 Whilst they do not form part of this ESA, the following documents have been submitted with the planning application:

- Planning Statement, prepared by Turley
- Statement of Community Involvement, prepared Turley
- Drgs Parameters Plan and Plateau Plans prepared by KPP
- Drgs Site access arrangements and off-site improvements prepared by AECOM

Project Design Team

A1.23 The other Chapters have been prepared by:

- Chapter 6 – Socio-economic - Turley
- Chapter 7 – Landscape and Visual – TGP
- Chapter 8 – Ground Conditions – Wardell Armstrong
- Chapter 9 – Ecology – Brooks Ecology
- Chapter 10 – Flood Risk and Drainage - Curtins
- Chapter 11 – Highways and Transport – Aecom
- Chapter 12 – Noise – Aecom
- Chapter 13 – Air Quality – Aecom

A1.24 In line with Part 5 (18(5)) **Table A1.2** sets out the relevant expertise or qualifications of those involved in preparing this ESA

Chapter	Author/Contributor	Qualifications
A1. Introduction	Turley Marianne McCallum (Associate Director)	BSC(Hons) DiPTP, MRTPI
A2. Approach to EIA	Turley Marianne McCallum (Associate Director)	BSC(Hons) DiPTP, MRTPI
A3. Description of Site	Turley Marianne McCallum (Associate Director)	BSC(Hons) DiPTP, MRTPI
A4. Proposed Development	Turley Marianne McCallum (Associate Director)	BSC(Hons) DiPTP, MRTPI
A5. Consideration of Alternatives	Turley Marianne McCallum (Associate Director)	BSC(Hons) DiPTP, MRTPI
A6. Economy	Turley Richard Laming (Senior Director – Head of Economics) Fiona Elton (Consultant)	BA (Hons) DiPTP, MRTPI MPLAN MRTPI
A7. Landscape and Visual	Topia Landscape Architects Sue Firth (Director)	BSC (Tech) Hons Applied Biology, BLD Landscape Design, CMLI Chartered

		Landscape Architect
	TGP North Ltd Andrew Gardner (Director)	MA (Hons) Landscape Architecture, CMLI Chartered Landscape Architect
A8. Ground Conditions	Wardell Armstrong Penny Longstaff (Principal Environmental Consultant)	BSc(Hons) and MSc.
A9. Ecology	Brooks Ecology Ltd Christopher Shaw (Ecologist)	BSc (Hons), ACIEEM
A10. Flood Risk and Drainage	Curtins Stuart Baker (Associate)	BEng (Hons Civil Engineering
A11. Transportation	AECOM Stephen Moss (Associate Director, Transportation)	BEng (Hons) CEng MICE MCIHT
A12. Noise and Vibration	AECOM Nathan Green (Acoustic Consultant, Environment and Ground Engineering)	BSc (Hons), AMIOA
A13. Air Quality	AECOM Kevin Turpin (Principle Scientist)	Ph.D. in Transport Emissions, De Montfort University: 1st Class Honours, University Of West of England. Member of the Institute of Air Quality Management: Member of the Institution of Environmental Sciences

	Tom Stenhouse (Associate Director)	Ph.D. in Atmospheric Chemistry, University Of Cambridge: MChem (Master of Chemistry): 1st Class Honours, University Of Leeds. Member of the Institution of Environmental Sciences: Member of the Institute of Air Quality Management: Chartered Environmentalist
A14. Inter-active and Cumulative Effects	Turley Marianne McCallum (Associate Director)	BSC(Hons) DiPTP, MRTPI
A15. Summary of Mitigation and Residual Effects	Turley Marianne McCallum (Associate Director)	BSC(Hons) DiPTP, MRTPI

Environmental Statement

A1.24 For the avoidance of doubt the Environmental Statement (ES) for this Proposed Development comprises:

- July 2016 ES Volume 1 Main Text; Volume 2 Technical Appendices (**Addendum Technical Appendix A1.0 and A1.1**)
- ESA 2017 Volume 1 Main Text; Volume 2 Addendum Technical Appendices; and Non-technical Summary.

Comments

A1.25 Comments on the Planning Application and ES should be forwarded to: Kirklees Metropolitan Borough Council at:

Team Leader Major Developments
Investment & Regeneration Service
Kirklees Council
Civic Centre 3
Market Street
Huddersfield
HD1 2YZ

The Planning Service,
Bradford Council
4th Floor Britannia House,
Hall Ings
Bradford,
BD1 1HX.

Availability of Documents

A1.26 Additional copies of the NTS (free of charge) and the ES and Technical Appendices A2.2 (price on application) are available from:

Turley
2 Bond Court
Leeds
LS1 2JZ

References

A1.1 Town and Country (Environmental Impact Assessment) Regulations 2011

A1.2 Town and Country (Environmental Impact Assessment) Regulations 2015

A1.3 Town and Country (Environmental Impact Assessment) Regulations 2017

A2. Approach to EIA

A2.1 This Chapter of the July 2016 ES (**Addendum Technical Appendix A1.0 and A1.1**) sets out the methodology for undertaking the ES. In this chapter comments are made with regard to each section of the Approach to EIA Chapter 2 of the July 2016 ES in order to clarify whether the information presented remains valid, or whether changes to the approach undertaken have been made.

A2.2 The following paragraph is new text

Approach to ESA

A2.3 This ESA reviews the assessment undertaken in the July 2016ES and then provides updates or new assessments where necessary. In the case of the Chapter 7 Landscape and Visual Assessment and Chapter 13 Air quality, the July 2016 ES Chapters have been replaced in their entirety. In all other technical chapters, the author has reviewed the specific July 2016 ES chapter in detail and provided confirmation where the original text remains valid, or provided new text where updates are required. The same structure is used for each Chapter assist the reader. Updated Technical Appendices are also provided, where necessary and are included in Volume 2 of the ESA.

A2.4 The Environmental Statement for the Proposed Development therefore comprises this ESA 2017 and the July 2016 ES including technical appendices as provided in **Technical Appendix A1.0 and A1.1**.

Introduction

A2.5 The Chapter 2 of the July 2016 ES remains valid in terms of paragraphs 2.1 to 2.5.

Screening and Scoping of the ES

A2.6 Paragraph 2.6 of the July 2016 ES is valid except that reference to the "2011 Regulations" should now read "2017 EIA Regulations". [Ref 1.3]

A2.7 The following text should be added after 2.6 "It *is noted that the 2017 EIA Regulations Schedule 2 reduces the thresholds for industrial estate development projects from 5ha to 0.5ha. This change does not affect the Proposed Development as EIA is being undertaken voluntarily*."

A2.8 Paragraphs 2.7 to 2.10 of the July 2016 ES remain valid.

Approach to the ES

A2.9 Paragraph 2.11 of the July 2016 ES (**Addendum Technical Appendix 1.0**) advised that the application was assessed on the basis of the drawings submitted with the application. This paragraph is replaced with "*A full description of the Proposed Development considered in the July 2016 ES is set out in **Chapter 4** with the key associated drawings provided in **Technical Appendices 4.1 and 4.2**. Since the July*

2016 ES was prepared the Proposed Development description has changed to exclude residential development anywhere on site. As a consequence, this ESA provides a revised Description of Proposed Development, ***Chapter A4*** *(****Addendum Technical Appendix A4.0)*** *and it is this Proposed Development that is assessed in the preceding technical chapters*."

A2.10 The following paragraphs are provided after paragraph 2.11 of the July 2016 and consider the new requirements of the 2017 EIA Regulations.

A2.11 *Since the July 2016 ES was prepared the new EIA Regulations 2017 have been issued. Schedule 4 as referenced in Chapter A2, includes a number of more detailed or new requirements, which were not in the previous EIA regulations.*

A2.12 *In terms of the need to consider the impact of the development on human health, the July 2016 ES and this ESA 2017 consider the potential impact on human health from ground conditions and contamination, water, traffic, noise, and air quality – topic chapters A8, A10, A11, A12 and A13. These chapters are supported, as necessary, but Addendum Technical Appendices Volume 2 of the ESA 2017*

A2.13 *It is noted that the site is crossed by a high pressure gas pipeline which is operated by Northern Gas Networks. Both the HSE and Northern Gas Networks were consulted on the proposals and have raised no objections. It is considered that with standard tried and tested measures in place regarding easements from the line as well as construction methods, there will not be any significant risks to human health or ant elevated risk of a major accident, hazard or disaster that may affect people or other environmental receptors on or around the site.*

A2.14 *The potential environmental effects of climate change on the development is considered in relation to flood risk and drainage, Chapter A10.*

A2.15 *it is considered that there are no other issues or topics raised by the 2017 EIA Regulations that are not already covered in the July 2016 ES or this ESA.*

Approach to ES

A2.16 Paragraphs 2.11 to 2.33 of the July 2016 ES remain valid, and are supplemented by the following confirmation of what constitutes the Environmental Statement in this case:

- Original Environmental Statement (July 2016) and technical appendices (**Addendum Technical Appendix A1.0 and A1.1**)
- This Environmental Statement Addendum (ESA) (October 2017), Addendum Technical Appendices and Non-technical summary.

Approach to the Technical Assessment

A2.17 The approach to the technical assessment remains valid as set out in paragraphs 2.11 to 2.21 of the July 2016 ES. Where the approach differs, this is clearly set out in the technical chapter.

Level of Significance

A2.18 Paragraphs 2.22 to 2.32 of the July 2016 ES remains valid. Where the approach differs, this is clearly set out in the ESA technical chapter.

Assumptions and Limitations

A2.19 Paragraph 2.33 of the July 2016 ES remains valid.

A3. Description of the Development Site

A3.1 This Chapter of the July 2016 ES (**Addendum Technical Appendix A1.0**) presents a brief description of the location of the development site and its specific characteristics. There have been no significant changes to the site or its context since the July 2016 ES was prepared. **Chapter 3 of the July 2016 ES** remains **valid**.

A4. Proposed Development

A4.1 This ESA Chapter replaces Chapter 4 of the July 2016 ES.

A4.2 The description of development has been amended to remove reference to the residential development, as follows:

Re-development of former waste water treatment works following demolition of existing structures to provide employment uses (Use Classes B1(c), B2 and B8) on land off Cliff Hollins Lane and provision of a school car park for Woodlands Primary School on land off Mill Carr Hill Road (outline application – all matters reserved).

A4.3 The red line area for the site remains as set out in the July 2016 ES, as follows:

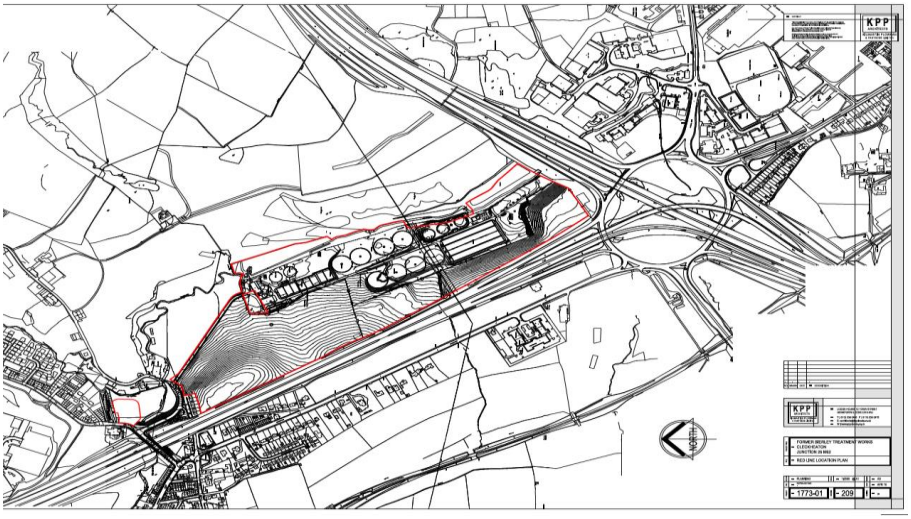

Figure A4.0: **Site Area**

A4.4 Details of the programme of works are included within this Chapter as far as they are known as this stage. Detailed consideration of effects during the construction and proposed mitigation measures are provided in each relevant Chapter of the ES.

A4.5 This Chapter should be read in conjunction with the application drawings including Parameters Plan and Plateaus Plan, Site Sections, the Transport Assessment and numerous technical reports provided as technical appendices. All matters other than means of access are reserved for subsequent approval and hence much of the detail will come forward at a later stage.

Development Parameters

A4.6 It is standard practice with outline planning applications to establish a set of development parameters to both guide the development and to aid the assessment of effects. This approach ensures that the future development of the site at the reserved matters stage does not exceed what has been assessed in the ESA 2017.

A4.7 For clarity, the Development Parameters in this case on the Parameter Plans (as **Figure A4.1)** and are defined as:

- Distribution of land uses
- Maximum floorspace for industrial units
- Buildings heights
- Vehicular access locations
- Drainage attenuation ponds

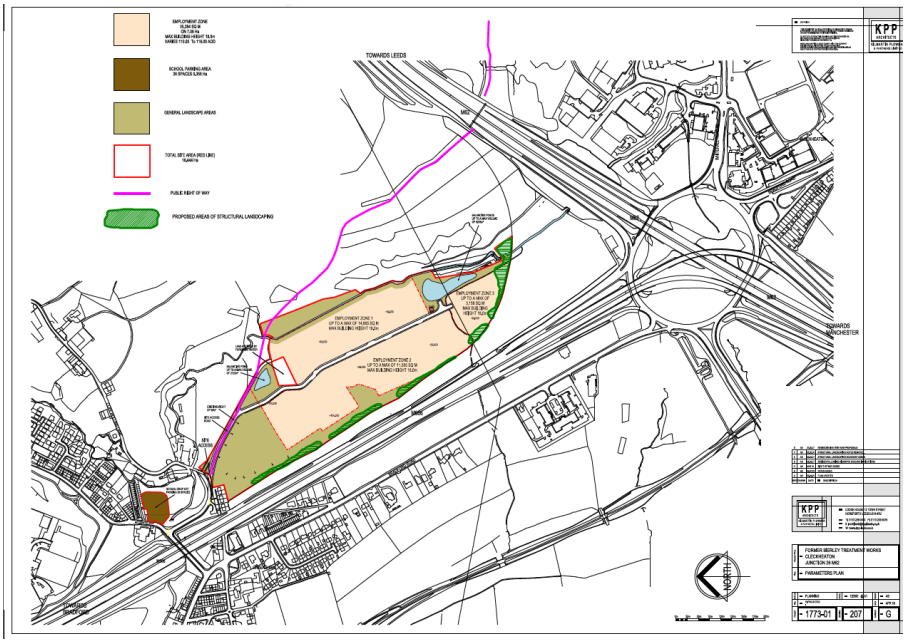

Figure A4.1: Parameters Plan Revised Proposed Development

A4.8 An Illustrative Masterplan has been prepared for Scenario 2 which demonstrates how the Development Parameters can be accommodated on the site. However, the Illustrative Masterplan is entirely illustrative, and reflects how one potential outcome in line with the maximum parameters. It is not used in any assessments.

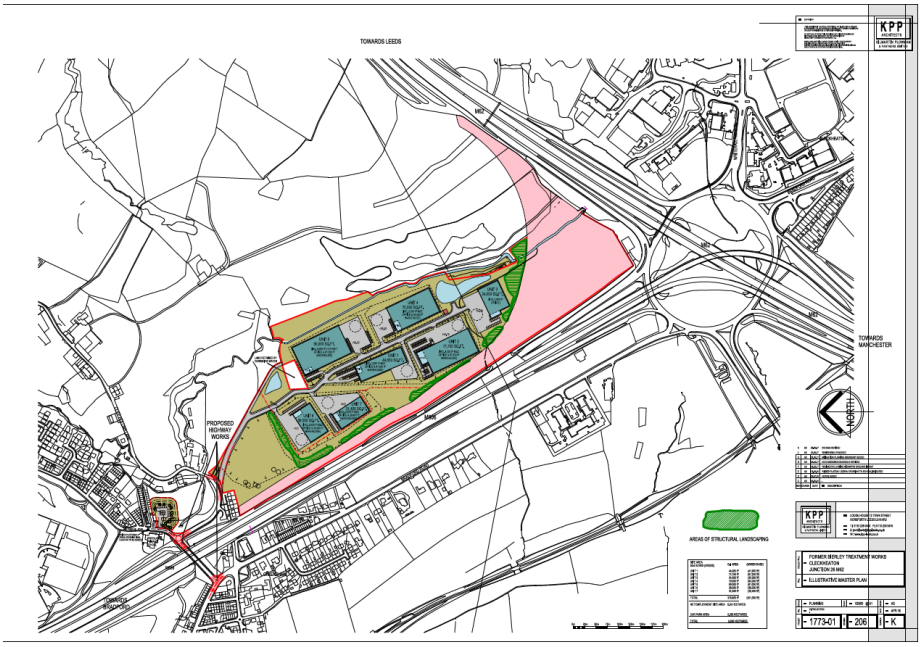

Figure A4.2: Illustrative masterplan

A4.9 Following discussions with Highways England a more extensive area of land to accommodate possible improvements to the Chainbar roundabout (Junction 26 M62) may be required. The Revised Parameters Plan (**Figure A4.1**) ensures that the developable area takes this possible alignment into account by keeping this part of the site free from development.

Distribution of Land uses

A4.10 The distribution of uses is shown on Parameters Plan **Figure A4.1.** The following table, **Table 4.1**, sets out the development parameters for the original proposals and the revised Proposed Development. This enables a comparison to be made between the largest scale of development on site (Original Proposals) and a reduced area (revised Proposed Development).

Table A4.1 Development Parameters Comparison

Use	Original Proposals (2016)			Revised Proposals (2017)		
	Area (Net)	Max Floorspace	Max Height	Area (Net)	Max Floorspace	Max Height
Employment Zone 1		14,865 sq m	18m AGL		14,865sqm	18m AGL
Employment Zone 2		11,613 sq m	18m AGL		11,696sqm	18m AGL
Employment Zone 3		11,613 sq m	18m AGL		3,158sqm	18m AGL
Total	9.94ha			7.08ha		

Residential	3.25ha	101 units	9m AGL	3.25ha	0 units	NA
School Car Park	0.356	36 spaces	-	0.356	36 spaces	-
Drainage Attenuation Ponds						
Residential area		2125m3			2125m3	
Employment area		6235m3			6235m3	

A4.11 The revised Parameter Plan amends the land use for the site to solely employment (including associated infrastructure and parking). The Proposed Development is for B2/B8 employment uses reflecting the proximity of the site to the key motorway network.

A4.12 Structural landscaping is provided on the site boundaries providing an appropriate separation distance from the motorways and other adjacent land uses. Drainage attenuation ponds are also identified, and are unchanged from the original proposals.

A4.13 The proposed car park for Woodlands CofE School is also identified on the Parameter Plan, **Figure A4.1**. This is unchanged from the original proposals.

Building heights

A4.14 The proposed maximum building heights for the industrial units in the Revised Development Proposals are the same for the original proposals, and are shown on Parameter Plan in **Figure A4.1.** Maximum building heights of 18m are set out in metres above the proposed ground level (AGL).

A4.15 The height in metres in considered as a maximum, and allows for chimney heights etc., It is likely that final completed storey heights would actually be below this height and there will be variety within the zones. However, for the purposes of a fully robust assessment, a maximum height is given.

Location of Access

A4.16 Full details of the means of access are to be reserved for later approval. However, the Parameters Plan (**Figure A4.1**) defines the location of the access from Cliff Hollins Lane, reflecting the existing line of the access to the former WWTW. The location of access to the new school car park will be from Mill Carr Hill Road, opposite Woodlands CofE School. This is unchanged from the original proposals.

Site Levels

A4.17 The proposals also include the creation of building plateaus in order to provide level areas for building. The Plateau Plan and Site Sections below show how the levels would be provided on site. The plateaus would be achieved by cut and fill.

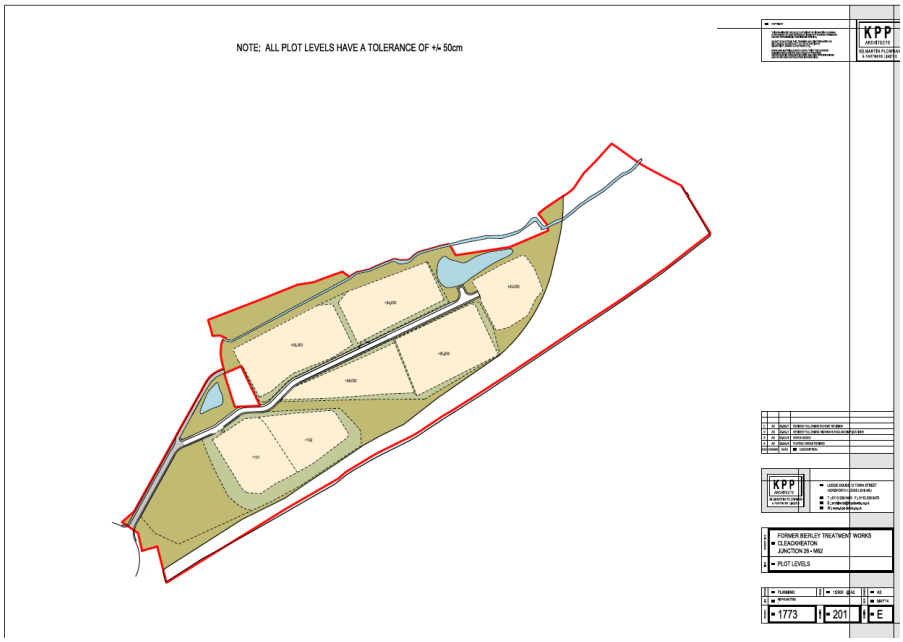

Figure A4.3: Plateau Plan Scenario 2

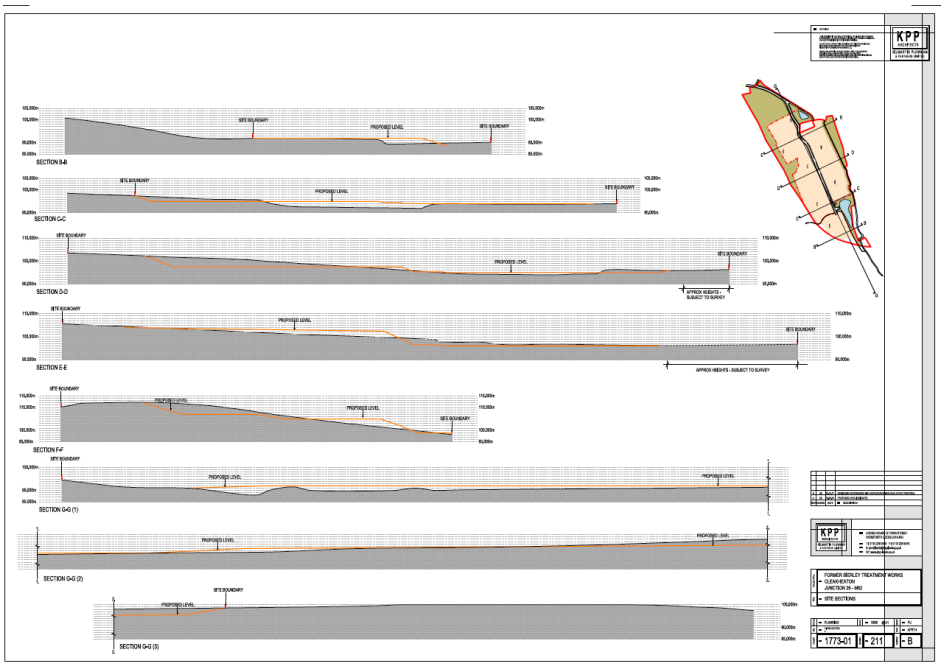

Figure A4.4: Site Section Plan

Construction Phasing

A4.18 At this stage in the project, no detail is known on construction programme or phasing. However, for the purposes of modelling (particularly in respect of transport), it is assumed the development will be commenced in 2022, after the submission and determination of reserved matters application (s) and will be completed by 2026.

A4.19 The general approach to the construction will follow these principles:

1. Establish a site compound
2. Demolish existing structures and buildings, and stockpile the materials for reuse
3. Site remediation
4. Site regrading to create development plateaus including temporary drainage provision
5. Access road and servicing plots and advance landscaping
6. Construct buildings in line with market demand

A5. Consideration of Alternatives

A5.1 This Chapter of the July 2016 ES (**Addendum Technical Appendix A1.0 and A1.1**) sets out the need for the Proposed Development and the consideration of the main alternatives. The addendum has been prepared due to revisions being made to the proposals as a result of comments made during the consultation period.

A5.2 This chapter is prepared by Turley

A5.3 In this chapter comments are made with regard to each section of the Consideration of Alternatives chapter of the July 2016 ES in order to clarify whether the information presented remains valid, or whether the revised scheme would result in changes to the assessment.

Legislative and Policy Context

A5.4 Paragraph 5.2 of the July 2016 ES remains valid although reference to "Schedule 4, Part 1(2) and Part 2(4) of the EIA Regulations 2011" should be replaced by " Schedule 4 (2) pf the EIA Regulation 2017." [Ref 1.3]

A5.5 Paragraph 5.3 remains valid, except reference to "paragraph 4 Part II of Schedule 4" should be replaced by "Schedule 4 (2)."

Requirement and Need for Development

Employment

A5.6 Paragraphs 5.4 and 5.5 remain valid.

A5.7 Paragraph 5.6 should be updated to reflect the latest position in planning policy and associated economic strategies. The references to the Kirklees Council's emerging Local Plan and in the bullets 2 at paragraph 5.6 should be replaced with the following:

- Kirklees Council's emerging Local Plan Publication Draft (2016) [Ref A5.1]

Leeds City Region

A5.8 Paragraph 5.7 to 5.8, and Figure 5.1 remain valid

Kirklees Council Policy

Adopted Policy

A5.9 Paragraphs 5.9 to 5.11 remain valid.

Emerging Policy and Evidence Base

A5.10 Paragraph 5.12 remains valid.

A5.11 Reference in paragraph 5.13 to the" new Local Plan [Ref 5.3]" should be changed to "new Local Plan (2016) [Ref A5.1]".

A5.12 Paragraphs 5.14 to 5.21 remain valid. The following paragraph should be added after paragraph 5.21 to provide an update on the most recent Kirklees Council Local Plan.

A5.13 The Allocations and Designations Plan allocations within the Kirklees Councils Publication Draft Local Plan [Ref A5.1] reduces the size of the proposed employment allocation to reflect the Highways England potential land requirements. Site Allocation reference 1985a seeks to allocate 14.06ha of land at the site for employment.

Local Policy summary

A5.14 Paragraphs 5.22 to 5.24 are valid. The following paragraph should be provided after 5.24:

A5.15 More recently, KMBC has progressed its Local Plan further and is still seeking to allocate 14.06ha of employment land at the site. This re-iterates the on-going support for the site in contributing towards employment land provision and economic growth within the borough.

A5.16 Paragraph 5.25 remains valid.

Market Demand

A5.17 The Market Report prepared by Dove Haigh Philips to support the application remain valid, and therefore paragraphs 5.26 to 5.30 remains unchanged.

Need for Residential Development

A5.18 The Proposed Development no longer includes residential development, and therefore paragraphs 5.31 to 5.37 are no longer relevant, and are deleted.

Need for Car Park Development

A5.19 The proposed car park for Woodlands CofE School remains part of the Proposed Development, therefore paragraphs 5.38 to 5.45 remain valid.

Alternatives

A5.20 This section of Chapter 5 considered the main alternatives considered when preparing the Proposed Development. Paragraphs 5.46 remains valid.

Do nothing Scenario

A5.21 The implications and effects of the "do nothing scenario" are unchanged, and therefore paragraphs 5.47 to 5.50 remain valid.

Alternative Sites

A5.22 There are no new alternative sites that should be considered, and therefore paragraphs 5.51 to 5.59 remain valid.

Committed Sites

A5.23 There are no known significant changes to the committed sites considered in the assessment which would alter the conclusions on their appropriateness as a reasonable alternative to the Proposed Development. Paragraphs 5.60 to 5.74 remain valid.

Local Plan: Strategic Sites

A5.24 There are no known significant changes to the Local Plan Strategic Sites considered in the assessment which would alter the conclusions on their appropriateness as a reasonable alternative to the Proposed Development. Paragraphs 5.75 to 5.88 remain valid.

Draft Local Plan: Proposed Allocations

A5.25 There are no known significant changes to the proposed allocations considered in the assessment which would alter the conclusions on their appropriateness as a reasonable alternative to the Proposed Development. Paragraphs 5.89 to 5.96 remain valid.

Other Potential Sites

A5.26 There are no known significant changes to the potential sites considered in the assessment which would alter the conclusions on their appropriateness as a reasonable alternative to the Proposed Development. Paragraphs 5.97 to 5.119 remain valid.

Alternative Options

A5.27 This part of the July 2016 ES considered alternative development options within the Application Site. In terms of considering the main alternative forms of development on the Application Site paragraphs 5.120 to 5.133 remain valid.

A5.28 Paragraph 5.134 to 5.136 considered the Proposed Development as set out in Chapter 4 of the July 2016 ES, known as Option 14. Paragraph 5.134 and 5.135 remain valid. However, paragraph 5.136 is deleted and replaced by the following:

A5.29 In response to feedback during the planning application process, Option 14 is no longer the preferred option, and is now considered one of the alternative forms of development which has been discounted. The basis for discounting this option relates to the expected land requirement identified by Highways England for the potential improvements to the M62 Chainbar roundabout, and the removal of residential development from the Proposed Development. This Option is no longer considered viable or deliverable.

A5.30 The following paragraphs are provided after paragraph 5.136 as follows:

Proposed Development

A5.31 The Proposed Development scheme seeks to provide the level of employment land required to make a significant contribution towards the supply of employment land in support of Kirklees Council's Economic Strategy. The change in the viability of employment development along the M62 corridor supports an employment only scheme in this location.

A5.32 The developable area has been reduced to provide an appropriate balance between the economic growth requirements, Green Belt and potential highway improvements, whilst also ensuring any environmental effects are minimised and mitigated.

A5.33 The Proposed Development is considered to be the most viable proposal which addresses the environmental and physical constraints, and the market requirements.

References

A5.1 Kirklees Council's emerging Local Plan Publication Draft (2016)

A6. Economy

Purpose of the Assessment

A6.1 This Chapter provides an addendum to the assessment of the likely impacts of the Proposed Development on the local economy and population as included within the July 2016 ES. (**Addendum Technical Appendix A1.0**) The addendum has been prepared due to revisions being made to the proposals as a result of comments made during the consultation period.

A6.2 This chapter is prepared by Turley

A6.3 In this chapter comments are made with regard to each section of the Economy, Population and Society chapter of the July 2016 ES (hereafter 'the July 2016 ES') in order to clarify whether the information presented remains valid, or whether the revised scheme would result in changes to the assessment.

Legislative Framework

National Policy and Legislation

A6.4 The legislation, planning policy and guidance set out in paragraphs 6.2 – 6.20 remains valid, although not all of this is still relevant to the revised scheme. The national policy and legislation included in the July 2016 ES that is still relevant is set out below. Further to this, the Proposed Development should also be considered in the context of the following more recently published national industrial strategy. An overview of the strategy is set out below.

National Planning Policy Framework

A6.5 The National Planning Policy Framework (NPPF) (Ref A6.1) published in March 2012, sets out the Government's statutory planning policies for England. The NPPF is built around a policy commitment to sustainable development, with the planning system expected to play an economic, social and environmental role :

"an economic role – contributing to building a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation; and by identifying and coordinating development requirements, including the provision of infrastructure"

"a social role – supporting strong, vibrant and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating a high quality built environment, with accessible local services that reflect the community's needs and support its health, social and cultural well-being"

"an environmental role – contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy. [Ref A6.1, Para 7]

A6.6 The NPPF identifies the Government's vision to build a strong and competitive economy:

"The Government is committed to securing economic growth in order to create jobs and prosperity.

The Government is committed to ensuring that the planning system does everything it can to support sustainable economic growth. Planning should operate to encourage and not act as an impediment to sustainable growth. Therefore significant weight should be placed on the need to support economic growth through the planning system.

To help achieve economic growth, local planning authorities should plan proactively to meet the development needs of business and support an economy fit for the 21st century."[Ref A6.1]

National Planning Practice Guidance

A6.7 The NPPF is supplemented by the web-based Planning Practice Guidance (PPG) [Ref A6.2], which provides further guidance on Environmental Impact Assessment – as governed by the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 – in order to assess whether a development would have a significant effect on the environment. Statements should primarily focus on main or significant environmental effects, with impacts of little or no significance addressed only briefly to show that they have been considered [Ref A6.2]. The Town and Country Planning (Environmental Impact Assessment) Regulations were updated in 2017.

Building Our Industrial Strategy – Green Paper

A6.8 In January 2017 the Government published its Industrial Strategy Green Paper 'Building Our Industrial Strategy' [Ref A6.3].

A6.9 The strategy aims to "improve living standards and economic growth by increasing productivity and driving growth across the whole country" [Ref A6.3, Page 5], identifying 10 pillars which frame the approach and can stimulate growth. These include supporting the start-up and growth of new businesses, skills development, encouraging trade and investment and ensuring that local areas can capitalise and build upon competitive strengths to drive growth throughout the UK.

A6.10 It confirms the national commitment to supporting the re-balancing of economic growth across the country:

"More balanced growth across the country can enable higher growth for the United Kingdom overall. The revival of underperforming areas can spur productivity in areas with lower costs, cheaper land, less congested infrastructure, and other underused assets." [Ref A6.3, Page 7]

A6.11 Despite the current uncertainty surrounding the forthcoming Brexit negotiation, the Government's goals or expectations for economic growth remain clear and provide a positive investment context for the region.

A6.12 The strategy places a particular emphasis on building on the *"strongly-performing areas that exist within every region and nation of the UK"*[1], with areas such as Kirklees and Bradford having a key role to play in supporting the creation of jobs, prosperity and economic growth across the wider sub-region.

Additional National Supporting Evidence

A6.13 The national guidance set out in paragraphs 6.21 – 6.23 is no longer relevant to the Proposed Development.

Sub-Regional Strategy

A6.14 The relevant sub-regional guidance set out in paragraphs 6.24 – 6.28 remains valid. Paragraphs 6.29 and 6.30 are no longer relevant.

Kirklees Local Policy

A6.15 The relevant local policy for Kirklees Council set out in paragraphs 6.31 – 6.35 remains valid. Paragraph 6.36 is no longer relevant.

A6.16 The local policy set out in paragraphs 6.37 – 6.43 remains valid, although not all of this is still relevant to the revised scheme. The local policy included in the July 2016 ES that is still relevant is set out below. Further to this, the Proposed Development should also be considered in the context of the more recently published Kirklees Publication Draft Local Plan. An overview of the Plan is set out below.

Kirklees Draft Local Plan

A6.17 Kirklees Council are in the process of producing a new Local Plan, with public consultation on the Draft Local Plan - Strategy and Policies (hereafter 'the Plan') [Ref A6.4] taking place from November 2015 to February 2016. The 2014 Local Development Scheme (LDS) [Ref A6.5] indicates that the Local Plan will be adopted in late 2017 although it is understood it will be later as the EIP took place in October 2017.

A6.18 The Plan sets out a vision for Kirklees:

> *"In 2031, Kirklees will be a great place to live, work and invest in, delivered through an integrated approach to housing and employment. Development will have taken place in a sustainable way (balancing economic, social and environmental priorities) and by making efficient and effective use of land and buildings supported by necessary infrastructure and with minimal effect on the environment. Health inequalities will have been reduced, enabling higher standards of health and well-being resulting from improved access to training and job opportunities..." [Ref A6.4, Para 3.2]*

A6.19 In order to achieve this vision, the Plan sets out strategic objectives to support the growth and diversification of the Kirklees economy, by increasing skill levels and employment opportunities.

A6.20 The Plan seeks to deliver 32,200 jobs over the plan period from 2013-31 to meet the objectively assessed jobs needs of local businesses and inward investment opportunities. Through the delivery of jobs the plan aims to attract and retain younger age groups within the district to build sustainable communities.

[1] *Ibid, p108*

A6.21 Kirklees Council also consulted on the Draft Local Plan - Allocations and Designations alongside the Strategy and Policies. Within both of these documents, the Plan identifies the application site as a potential site for employment uses.

Kirklees Publication Draft Local Plan

A6.22 The Publication Draft Local Plan [Ref A6.4] was published for consultation in December 2016 before being submitted to the Secretary of State for independent examination in April 2017.

A6.23 The Publication Draft Local Plan replicates the vision and strategic objectives set out within the 2015 Draft Local Plan, as summarised in paragraph 6.37 – 6.39 of the July 2016 ES.

A6.24 The targets for the delivery of new jobs and homes within Kirklees over the period from 2013-31 have been updated. The Publication Draft Local Plan seeks to deliver 23,000 jobs over the period to 2031 to meet the objectively assessed jobs needs of local businesses and inward investment opportunities.

Bradford Local Policy

A6.25 The relevant local policy for Bradford Council set out in paragraphs 6.44 – 6.53 remains valid, with the exception of the following references:

- Bradford Replacement UDP - Paragraph 6.46: reference to providing 'adequate housing and community facilities to meet the district's needs' in paragraph 6.46;
- Bradford Core Strategy – Paragraph 6.51 bullet point 2: reference to providing 'a range of quality dwellings, in terms of type and affordability'; and
- Bradford Core Strategy – Paragraph 6.51 bullet point 3: reference to providing creating conditions for housing growth and city living.

Assessment Methodology

Methodology

A6.26 Due to the change in the uses proposed as part of the revised Proposed Development, elements of the assessment scope and methodology set out in paragraphs 6.54 – 6.59 of the July 2016 ES chapter are no longer relevant. The baseline factors and impacts types included in the July 2016 ES that are still relevant are set out below.

Baseline

- **Economy** - this includes analysis of economic activity, unemployment, occupations, average salaries and number of jobs. This analysis draws on sources including Census 2011 (Ref A6.6), Annual Population Survey (Ref A6.7), Jobseeker's Allowance by Occupation (Ref A6.8) Annual Survey of Hours and Earnings (Ref A6.9) and Business Register and Employment Survey (Ref A6.10).

A6.27 Nevertheless, although the same baseline data sources have been used for the assessment of the revised potential impacts and the assessment of significance of the Proposed Development, some of the statistics have been updated due to the availability

of more recently published data since the production of the July 2016 ES chapter. The updated data sources include:

- BCIS - Build costs (Ref A6.11)
- BIS - Business Population Estimates (released annually) (Ref A6.12)
- Experian - Local Market Forecasts (released quarterly) (Ref A6.13)
- ONS - Annual Population Survey (released quarterly) (Ref A6.7)
- ONS - Annual Survey of Hours and Earnings (released annually) (Ref A6.9)
- Kirklees Council - Statement of Accounts (released annually) (Ref A6.14)

A6.28 Notwithstanding these updates to some baseline indicators, the trends identified in the July 2016 ES are consistent with the updated information and so the baseline conditions remain valid.

Impacts

A6.29 Economic impacts have been modelled drawing on national data sets, Government guidance and details of the Proposed Development. The economic impacts of the Proposed Development are divided into demolition and construction impacts and operational impacts.

A6.30 The assessment of impacts during the construction phase includes the total Proposed Development, inclusive of the proposed school car park on the smaller part of the Application Site. However, it is not anticipated that significant socio-economic effects will be derived from the operation of proposed school car park. As a result, the operational socio-economic impacts of the car park have not been assessed.

Construction Impacts

A6.31 Construction impacts include construction costs and FTE (Full Time Equivalent) construction jobs supported by this spend and the uplift in GVA productivity generated through construction of the Proposed Development. In order to calculate these impacts the following methodology has been used:

- **Employment** - the total cost of construction associated with the Proposed Development was estimated using BCIS Build Cost data (Ref A6.11) which establishes the average build cost per sqm of development in West Yorkshire. The anticipated build cost associated with the proposed car park was estimated based on professional knowledge and experience, The number of employees generated was then derived from the average turnover per employee in the construction sector in Yorkshire and the Humber, drawn from the Business Population Estimates (BPE) 2015 (Ref A6.12), which is divided by the length of the construction period to identify gross full-time equivalent (FTE) jobs. Considerations of allowances for leakage and displacement are made in line with recognised guidance (Ref A6.15) in order to calculate net FTE jobs generated by the development, and a multiplier is applied to allow for employment indirectly

generated from the development during the construction phase, such as supply chain linkages or the value of contracts to local firms.

- **Productivity** - the average GVA per FTE worker is calculated using Experian local market forecasts (Ref A6.13). This is applied to the net FTE construction jobs estimated to be generated by the Proposed Development.

Operational Impacts

A6.32 The predicted effects derived from the Proposed Development during the operational phase include:

- **Employment** - In order to calculate the number of jobs generated through the operational phase of the proposed employment units, the floorspace parameters are applied to the relevant employment densities in line with national guidance (Ref A6.16). This calculates the number of direct gross FTE jobs generated. Considerations of appropriate allowances for leakage and displacement are made in line with national guidance (Ref A6.15) in order to calculate a net figure of FTE job creation. A multiplier is also applied to allow for employment generated through indirect and induced effects[2] to be factored in to the assessment.

- **Productivity** - the average GVA per FTE worker is calculated for relevant sectors using Experian local market forecasts (Ref A6.13). This is applied to the net FTE jobs estimated to be generated by the Proposed Development.

- **Business Rate Revenue** - In order to calculate the uplift in non-domestic rates (known as business rates) through the operational phase of the Proposed Development, the net additional floorspace is disaggregated by use. The Valuation Office Agency (VOA) business rates valuation tool (Ref A6.17) is utilised to run comparable analysis of similar units and uses in the area local to the Application Site. The derived indicative rates are subsequently applied to estimated rateable floorspace elements within the Proposed Development, with a national multiplier applied to derive an estimated total business rate payable per annum.

A6.33 Economic impact estimates are presented as net figures, discounting for leakage and displacement as well as accounting for multipliers to present indirect and induced impacts.

Study Area

A6.34 Due to the change in the uses proposed as part of the revised Proposed Development, the neighbourhood scale of the study area defined in the July 2016 ES is no longer relevant. However the study area defined for the economy receptor (local and wider impact areas) as set out in the July 2016 ES (paragraphs 6.61 – 6.62) remains valid.

Surveys

A6.35 The status on surveys set out in paragraph 6.63 of the July 2016 ES remains valid.

[2] Induced effects relate to the amount of increased income generated via a direct effect that is re-spent on goods and services within the local economy.

Consultation

A6.36 The status on consultation set out in paragraph 6.64 of the July 2016 ES remains valid.

Significance Criteria

A6.37 The significance criteria used within the July 2016 ES (paragraphs 6.65 – 6.82) remains valid.

Baseline Conditions

A6.38 The economy section of the baseline conditions, set out in paragraphs 6.83 – 6.108, remains valid. However due to the change in the uses proposed as part of the revised Proposed Development, the housing, education, health and open spaces and recreation facilities sections (paragraphs 6.109 – 6.143) are no longer relevant to the revised Proposed Development.

A6.39 As previously noted, some of the baseline data sources have been updated in order to update the socio-economic modelling and assessment of impacts.

A6.40 Notwithstanding these updates to some baseline indicators, the trends identified in the July 2016 ES are consistent with the updated information and so the baseline conditions for the economy remain valid.

Predicted Significant effects

A6.41 This section provides an updated assessment of the revised potential impacts of the Proposed Development, during both the construction and operational phases.

Effects during the construction phase: short term

A6.42 This section assesses the revised potential impacts of the Proposed Development during the construction phase.

Employment

A6.43 The employment effects estimated to be generated by investment in the Proposed Development during the construction phase are summarised below, **Table A6.1**

A6.44 The assessment indicates that the construction phase could generate 125 net additional full-time equivalent (FTE) temporary positions per annum in the wider impact area, of which 84 FTE jobs could be supported within the local impact area. Of this total, it is estimated that 83 net FTE positions would be directly created across the wider impact area, inclusive of 67 net direct FTE jobs within the local impact area. A further 17 net FTE positions generated through indirect and induced effects in the local impact area, increasing to 42 net FTE jobs across the wider impact area. This will include contracts with the supply chain, salaries and onward expenditure.

Table A6.1 Construction Phase – Employment Effects

Net FTE Employment Generation	Local Impact Area	Wider Impact Area
Person-years of Employment	269	269
Construction Period (years)	3	3
FTE Employment	90	90
Direct Employment	67	83
Indirect / Induced Employment	17	42
Net Additional Employment (Total)	**84**	**125**

Source: Turley, 2017

A6.451 The impact on the population and economy of increases in construction related employment at the scale of the local and wider impact areas is beneficial, due to the potential for employment generation and wealth creation. The benefits will also extend beyond the wider impact area.

A6.46 At the local scale, the magnitude of the employment impacts during the construction phase is substantial, when benchmarked against the decline in construction employment over the last decade. Therefore, there is likely to be a direct, temporary, short-term effect of **substantial beneficial** significance on the population arising from the construction phase of the Proposed Development within the **local impact area**.

A6.47 At the scale of the wider impact area, the magnitude of the employment impacts during the construction phase is negligible. Therefore, there is likely to be a **negligible** effect on the population arising from the construction phase of the Proposed Development within the **wider impact area**.

Productivity

A6.48 The uplift in annual productivity – measured in GVA – in the local impact area economy as a result of construction of Proposed Development is estimated to be circa £5.0 million per annum. This effect increases to circa £7.3 million per annum when assessed across the wider impact area. This is summarised in **Table A6.2**

Table A6.2 Construction Phase – Productivity Effects

Net GVA Generation	Local Impact Area	Wider Impact Area
Direct GVA Impact	£4,100,000	£5,100,000
Indirect / Induced GVA Impact	£900,000	£2,200,000
Net Additional Impact (Total)	£5,000,000	£7,300,000

Source: Turley, 2017

A6.49 The impact on the population of increases in construction related GVA uplift is beneficial, with wealth creation in the local and wider impact areas. The magnitude of the impact is substantial when benchmarked against the marginal annual increase in productivity at the scale of the local impact area, with a minor impact at the wider impact area.

A6.50 Therefore, there is likely to be a direct, temporary short-term effect of **substantial beneficial significance** at the **local level** and **minor beneficial significance** at the **wider level**.

Effects during operational phase: medium-term to long-term

A6.51 This section assesses the revised potential impacts of the Proposed Development during the operational phase.

Employment

A6.52 The employment effects estimated to be generated by the proposed employment units during the operational phase are summarised in **Table A6.3** below.

A6.53 The assessment indicates that the operational phase could generate 770 net additional full-time equivalent (FTE) temporary positions per annum in the wider impact area, of which 388 FTE jobs could be supported within the local impact area. This is presented in the following table.

Table A6.3 Operational Phase – Employment Effects

Net FTE Employment Generation	Local Impact Area	Wider Impact Area
Gross Employment (FTE)	552	552
Leakage	138	39
Displacement	104	0
Direct Employment	311	513
Indirect / Induced Employment	78	257
Net Additional Employment (Total)	**388**	**770**

Source: Turley, 2017

A6.54 The impact on the population and economy of increases in operation related employment at the scale of the local and wider impact areas is beneficial, due to the potential for employment generation and wealth creation. The benefits will also extend beyond the wider impact area.

A6.55 At the scale of the local and wider impact areas, the magnitude of the employment impacts during the operational phase is minor. Therefore, there is likely to be a direct, temporary, long-term effect of **minor beneficial significance** on the population arising from the operational phase of the Proposed Development within the **local and wider impact areas**.

A6.56 If the effect of the employment generated during the operational phase was to be assessed using a smaller local impact area than Kirklees and Bradford combined, the magnitude would be greater. For example, at the Kirklees scale only, the magnitude of the employment impacts during the operational phase is of major beneficial significance and at the Bradford scale only, the impacts are of moderate beneficial significance.

Productivity

A6.57 The uplift in annual productivity – measured in GVA – in the local impact area economy as a result of the operation of Proposed Development is estimated to be circa £15.9 million per annum. This effect increases to circa £32.8 million per annum when assessed across the wider impact area. This is summarised in **Table A6.4**

Table A6.4 Operational Phase – Productivity Effects

Net GVA Generation	Local Impact Area	Wider Impact Area
Direct Employment (GVA) Impact	£11,800,000	£19,500,000
Indirect / Induced Employment (GVA) Impact	£4,100,000	£13,300,000
Net Additional Impact (Total)	**£15,900,000**	**£32,800,000**

Source: Turley, 2017

A6.58 The impact on the population and economy of increases in operation related GVA is beneficial, with wealth creation in the local and wider impact areas. However, the magnitude of the impact is negligible when benchmarked against the forecast annual increase in productivity in at the scale of the local and wider impact areas.

A6.59 Therefore, there is likely to be a **negligible** effect at the **local and wider levels**.

Business Rate Revenue

A6.60 The Proposed Development includes commercial uses that will be liable for payment of business rates to Kirklees Council. The Council's latest Statement of Accounts (Ref A6.14) indicates that, in 2015/16, approximately £102.3 million was collected by Kirklees Council through business rates. Over the period from 2004/05 to 2015/16, the income collected from business ratepayers has increased by 1.1% on average each year.

A6.60 The Proposed Development would generate approximately £590,000 in business rate revenue per annum for Kirklees Council, based on the average value per sqm for similar units and uses, drawing on data published by the VOA.

A6.61 Notably, the Government has announced that from 2020 local authorities will retain 100% of their business rates[3]. Further consultation on the Government's commitment to allow local government to retain 100% of the business rates they raise locally was undertaken over the period from 15th February to 3rd May 2017. The feedback from the consultation is currently being analysed and a decision on whether the commitment will be enforced is still to be determined.

[3] A system of top ups, transfers and tariffs will continue to operate to help even out inequalities between the level of business rates generated by individual Local Authorities. Therefore some authorities may not retain 100%.

A6.62 Assuming that the commitment is enforced over future years, there is potential for £590,000 in business rate revenue to be retained by Kirklees Council each year from 2020 onwards, as a result of the Proposed Development.

A6.63 The impact of business rates revenue arising directly from the Proposed Development is assessed as beneficial when considering the sensitivity on local public budget and expenditure for Kirklees Council. The magnitude of the impact of the Proposed Development compared to the recent change in business rates collected is moderate. Therefore, there is likely to be an indirect, permanent, long-term effect of **moderate beneficial significance** to the Council's revenue at the **local impact area** scale.

A6.64 There will be no significant effect on the wider scale public budget and expenditure arising from business rates revenue generated by the operational phase of the Proposed Development.

Scope of Mitigation

A6.65 The points on construction mitigation in paragraph 6.189 of the July 2016 ES remains valid.

A6.66 For the points on completed development mitigation at paragraph 6.190, reference to the adverse impacts on education and open space are no longer relevant. As a result, this should be updated to read:

'There are no significant adverse socio-economic effects identified, and hence no mitigation is required during the operational phase.'

Residual Effects Assessment

A6.67 The housing, education, health and open spaces and recreation facilities related sections of the original assessment of residual effects (set out within paragraph 6.191 and Table 6.24 of the July 2016 ES) are no longer relevant. Although, the economy related sections (including employment, productivity and businesses rates) remain valid. The sections of the assessment of cumulative effects set out in the July 2016 ES that remain valid and relevant are set out below.

A6.68 The following table (**Table A6.5**) presents the residual impacts for the Proposed Development. As only moderate or above effects are considered significant, significant effects relate to:

- Construction employment;
- Construction productivity; and
- Operational business rates.

Table A6.5 Summary of Residual Effects

Construction / Operational	Impact	Impact				Mitigation	Residual			
		Impact Significance	Adverse / Beneficial	Neighbourhood, Local, Wider	Direct/Indirect (D/I) Permanent/temporary (P/T) Period (ST/MT/LT)		Impact Significance	Adverse / Beneficial	Local, Regional, National	Direct/Indirect (D/I) Permanent/temporary (P/T) Period (ST/MT/LT)
Construction	Employment	Substantial	Beneficial	Local	D/I, T, ST	None required	Substantial	Beneficial	Local	D/I, T, ST
		Negligible	-	Wider	-	None required	Negligible	-	Wider	-
	Economic Productivity	Substantial	Beneficial	Local	D/I, T, ST	None required	Substantial	Beneficial	Local	D/I, T, ST
		Minor	Beneficial	Wider	D/I, T, ST	None required	Minor	Beneficial	Wider	D/I, T, ST
Operational	Employment	Minor	Beneficial	Local and Wider	D/I, P, LT	None required	Minor	Beneficial	Local and Wider	D/I, P, LT
	Economic Productivity	Negligible	-	Local and Wider	-	None required	Negligible	-	Local and Wider	-
	Business Rates	Moderate	Beneficial	Local	D/I, P, LT	None required	Moderate	Beneficial	Local	D/I, P, LT

Cumulative Effects Assessment

A6.69 The sections of the assessment of cumulative effects set out in the July 2016 ES that remain valid and relevant are set out below.

A6.70 The following development proposals are other committed or potential developments within the vicinity of the Application Site:

- **Land at Slipper Lane, Mirfield -** Outline application for erection of commercial floorspace (B1c, B2, B8) including details of engineering operations to form serviced employment plots and full application for the erection of 166 dwellings.

- **Peat Pond Farm, Lindley Moor Road, Lindley Moor -** Demolition of existing buildings, Outline application for Industrial Development (Class B1c B2 or B8) Plot A - (160,000sq ft/14,864 sqm). Erection of industrial unit. Plot B - (50,000sqft/ 4648 sqm) unit access from Crosland Road Detailed application (Plot C) for residential development of 252 dwellings, provision of open space and landscaping.

A6.71 The wider economic growth of the area associated with the cumulative schemes above will generate employment and productivity impacts during the construction and operational phases, in addition to the new businesses generating an uplift in business rate revenue.

A6.72 Based on an assessment of the committed development proposals set out above, the delivery of employment floorspace will have significant beneficial cumulative impacts upon employment and productivity levels, during both the construction and operational phases, and business rate revenue in EIA terms.

Monitoring

A6.73 The points on monitoring in paragraph 6.195 of the July 2016 ES remain valid.

References

A6.1 HM Government (2012) 'National Planning Policy Framework'

A6.2 HM Government (2014) 'National Planning Policy Guidance'

A6.3 HM Government (2017) 'Building our Industrial Strategy'

A6.4 Kirklees Council (2016) 'Publication Draft Local Plan - Strategy and Policies'

A6.5 Kirklees Council (2014) 'Local Development Scheme'

A6.6 ONS (2011) 'Census 2011'

A6.7 ONS via Nomis (2015) 'Annual Population Survey'

A6.8 ONS via Nomis (2016) 'Jobseeker's Allowance by Occupation'

A6.9 ONS via Nomis (2015) 'Annual Survey of Hours and Earnings'

A6.10 ONS via Nomis (2014) 'Business Register and Employment Survey'

A6.11 Building Cost Information Service (2017) 'Average Prices '

A6.12 Department for Business, Innovation and Skills (BIS) (2016) 'Business Population Estimates'

A6.13 Experian (2017) 'Local Market Forecast Quarterly' (March 2017)

A6.14 Kirklees Council (2016) 'Statement of Accounts 2015/2016'

A6.15 HCA (2014) 'Additionality Guide 4th Edition'

A6.16 HCA (2015) 'Employment Density Guide 3rd Edition'

A6.17 Valuation Office Agency (2015) 'Business Rates Valuation Tool'

A7. Landscape and Visual

Purpose of the Assessment

A7.1 This chapter replaces Chapter 7 in the July 2016 in its entirety. It assesses the potential landscape and visual impacts of the Revised Development for North Bierley Wastewater Treatment Works (herein after referred to as the Revised Development). This Chapter A7 replaces in its entirety Chapter 7 of July 2016.

A7.2 This assessment has been undertaken by TGP Landscape Architects (North) Ltd. This Chapter assesses the landscape visual impact of the Revised Development, with the land demarked for M62 - M606 Highway Junction works. This revised chapter is supported by **Addendum Technical Appendix 7.0** containing the relevant figures, A7.1 to A7.45, which includes illustrations, photographic plates and photomontage, (Refer to **Addendum Technical Appendix A7.0**)

A7.3 This Chapter is prepared by TGP Landscape Architects,

A7.4 The initial Landscape and Visual Impact Assessment (LVIA) was undertaken based on KPP Masterplan for Former Bierley Treatment Works, drawing no. 1773.01-206 Rev. B, April 2016. The LVIA was included as Chapter 7 of the Environmental Statement for Land at North Bierley Waste Water Treatment Works, Oakenshaw. This assessment is superseded by this Addendum document. A related planning application, for a new car park at Woodlands COE Primary School within Bradford District, was also submitted in July 2016.

A7.5 This Chapter A7 provides LVIA of the Revised Proposed Development as set out in Chapter A4, Proposed Development:

A7.6 This LVIA addendum chapter assesses a 'worse' case situation i.e. the landscape and visual effects of the maximum height buildings that would be constructed at any location within the defined zones. The zones illustrate potential areas of development, as shown on the Parameters Plan. For the purpose of the LVIA and supporting photomontage production, the plateau levels associated with each development zone are as shown in Figure A7.3, Potential Development Plateau Levels, which are based on the KPP Drg Ref No 1773-207 Rev G Parameters Plan drawing.

A7.7 The photography for the agreed photomontage viewpoints was completed in September 2016. The wirelines used for the photomontages reflect the maximum building heights and illustrate the potential development platforms where buildings may be located. The assessment includes consideration of potential strategic planting mitigation, consequently the Revised Development is illustrated as a 'worst case scenario' at Year 1 and then following mitigation, after 10 years of tree growth.

Legislative Framework

A7.8 This LVIA has been prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2017 [Ref A7.1], and best practice.

A7.9 A full and detailed consideration of national and local planning policy is contained in the accompanying Planning Statement. However, the following section reviews the policies of particular relevance to landscape and visual issues.

A7.10 This section provides a brief review of existing planning policies or extracts from policies, which are directly relevant to landscape issues relating to the Revised Development.

European Policy

European Landscape Convention (March 2007)

A7.11 The European Landscape Convention (ELC), created by the Council of Europe, promotes landscape protection, management and planning, and European co-operation on landscape issues. Signed by the UK government in February 2006, the ELC became binding from March 2007. It applies to all landscapes, towns and villages, as well as open countryside; the coast and inland areas; and ordinary or even degraded landscapes, as well as those afforded protection.

A7.12 The ELC defines landscape as "An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors." (Council of Europe 2000).

A7.13 It highlights the importance of developing landscape policies dedicated to the protection, management and creation of landscapes, and establishing procedures for the public and other stakeholders to participate in policy creation and implementation. Natural England is leading the implementation of the ELC in England and has worked with Defra and Historic England to produce the 'Guidelines for implementing the European Landscape Convention (April 2009).' [Ref A7.2]

National and Regional Policy

A7.14 The policy documents are:

- National Planning Policy Framework (March 2012) (Ref A7.3);
- Kirklees Unitary Development Plan Saved Policies (2007) (Ref A7.4);
- Kirklees Draft Local Plan (2016), (Ref A7.17);
- Bradford Core Strategy, (2017), (Ref A7.5);
- Replacement Calderdale Unitary Development Plan (2009) (Ref A7.6).
- Calderdale Local Plan Initial Draft (July 2017) (Ref A7.8).

A7.15 At the heart of the National Planning Policy Framework (NPPF) is a presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking.

A7.16 Paragraph 17 of the NPPF sets out 12 key principles of planning and states that it should:

'always seek to secure high quality design and a good standard of amenity for all existing and future occupants of land and buildings' (bullet point number 4);

'take account of the different roles and character of different areas, promoting the vitality of our main urban areas, protecting the Green Belts around them, recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it' (bullet point number 5); and

'encourage the effective use of land by reusing land that has been previously developed brownfield land) provided that it is not of high environmental value.' (bullet point number 8)

A7.17 Paragraphs 79-89 (Protecting Green Belt) provides the national approach to development in the Green Belt pertinent to the Revised Development.

A7.18 Paragraphs 109, 111, 113-115 set out the national approach to the reuse of brownfield land, use of agricultural land and protecting important landscapes. Paragraph 111 states that 'planning policies and decisions should encourage the effective use of land by re-using land that has been previously been developed (brownfield land), provided that it is not of high environmental value'. The NPPF is support by a Planning Practice Guide which provides further guidance on the approach to be taken to the implementation of the NPPF.

Kirklees Unitary Development Plan Saved Policies (2007)

A7.19 The majority of the application site is within Kirklees District, and, as such, the relevant development plan comprises the 'saved' policies of the Kirklees UDP, (refer to Figure A7.4 Kirklees Unitary Development Plan), which was adopted in March 1999. As a result of a Direction issued by the Secretary of State for Communities and Local Government, from 28 September 2007 some of the policies in the UDP continue to have effect ('saved policies'). Those policies not covered by the Direction are not "saved" and no longer form part of the development plan. **Table A7.1** sets out relevant key policies:

Table A7.1: Kirklees UDP Saved Policies - relevant to the LVIA

Policy No	Policy
Policy G1	*Regeneration will be secured through developments which:* *Strengthen and broaden the economic base and increase employment opportunities* *Improve infrastructure and secure the reuse of land and buildings and the improvement of their surroundings* *Benefit the economically deprived parts of the district, and* *iv. Improve the district's image*
Policy G4	*New development should achieve a high standard of design*
Policy G5	*Development proposals should have regard to equality of opportunity in terms of access to buildings and open space facilities and other relevant aspects of design, including the provision of ancillary facilities*

Policy No	Policy
Policy D1	*Development proposals which would lead to a loss of valuable open land within towns or urban countryside will not normally be permitted*
Policy BE1	*All development should be of good quality design such that it contributes to a built environment which:* *Create or retains a sense of local identity* *Is visually attractive* *Promotes safety, including crime prevention and reduction of hazards to highway users;* *Promotes a healthy environment, including space and landscaping about buildings and avoidance of exposure to excessive noise or pollution;* *v. Is energy efficient in term of building design and orientation and conducive to energy efficient modes of travel, in particular walking, cycling and use of public transport*
Policy BE2	*New development should be designed so that:* *It is in keeping with any surrounding development in respect of design, materials, scale, density, layout, building height or mass;* *The topography of the site (particularly changes in level) is taken into account;* *Satisfactory access to existing highways can be achieved; and* *Existing and proposed landscape features (including trees) are incorporated as an integral part of the proposal.*
Policy DL1	*Derelict and neglected land will be brought into beneficial use to assist in the regeneration of the district.*

Kirklees Draft Local Plan Submission Documents SD1, (2016)

A7.20 In April 2017, Kirklees Council submitted the draft Local Plan to the Secretary of State. This Plan consists of two main documents: Strategy and Policies; Allocations and Designations. The employment area part of the site is proposed to be allocated for employment purposes whilst the remainder of the Application site is proposed to remain in Green Belt. Independent planning inspectors are currently examining the Local Plan with Examination Hearings in October 2017. At the present time, the policies within the draft Local Plan have limited weight. **Table 7.2** lists out the relevant key policies:

Table A7.2: Kirklees Draft Local Plan – Policies relevant to the LVIA

Policy No	Policy
PLP 32 Landscape	*Proposals should be designed to take into account and seek to enhance the landscape character of the area considering in particular:* *a the setting of settlements and buildings within the landscape,* *b the patterns of woodland, trees and field boundaries;* *c the appearance of rivers, canals, reservoirs and other water*

Policy No	Policy
	feature patterns within the landscape.'
PLP33 Trees	*'planning permission will not be granted for schemes which directly or indirectly threaten trees or woodland of significant amenity. In addition, proposals are expected to retain important or valuable trees where they contribute to public amenity or the local character and distinctiveness, including the Wildlife Habitat Network and green infrastructure networks. Where tree loss is considered acceptable mitigation measures will be required.'*
PLP34 Conserving and enhancing the water environment	*proposals will be supported which do not result in deterioration of water courses or water bodies (including groundwater) and conserve and enhance:* *a the natural geomorphology of watercourses, including reinstating watercourses to their natural state through removal of modifications resulting from past industrial uses;* *b water quality;* *c the ecological value of the water environment, including the functionality of habitat networks.*

Bradford Core Strategy (2017)

A7.21 The relevant policies within the Bradford Core Strategy as adopted in August 2017 are summarised in **Table A7.3** below:

Table A7.3 Bradford Core Strategy – policies relevant to the LVIA

Policy No	Policy
Strategic Core Policy 1 (SC1) Overall Approach and Key Spatial Priorities B7	*Protect and enhance the District's environmental resources including areas of international and national importance, such as the South Pennine Moors, the character and qualities of the Districts heritage, landscape and countryside and maximise the contribution they can make to the delivery of wider economic and social objectives.*
B9	*Avoid increasing flood risk, and manage land and river catchments for flood mitigation, renewable energy generation, biodiversity enhancement and increased tree cover.*
B11	*Ensure that developments are of high quality and well designed and that they contribute to inclusive built and natural environments which protect and enhance local settings, and heritage and reinforce or create a sense of local character and distinctiveness.*
Strategic Core Policy 3 (SC3): Working together	*Planning decisions as well as plans, strategies, investment decisions and programmes should be based on:* *9. Ensure Landscape and environmental management and enhancement.*

Policy No	Policy
Strategic Core Policy (SC4): Hierarchy of Settlements	*Regional City* *A. The Regional City of Bradford (with Shipley and Lower Baildon) will be the prime focus for …employment …in the District.* *B. The Regional City of Bradford (with Shipley and Lower Baildon) will be transformed into attractive, cohesive, inclusive and safe places where people want to live, work, invest, and spend time in.* *Planning decisions as well as Plans, strategies, investment decisions and programmes should:* *2 Develop a strong sense of place which reinforces the distinct identity of the area through a high quality of public realm and well designed buildings within a clear framework of routes and spaces.* *3. Create new and improve existing green areas, networks and corridors including the urban fringe to enhance biodiversity and recreation.*
Strategic Core Policy 6 (SC6): Green Infrastructure	*Planning decisions as well as Plans, policies, strategies and investment decisions will support and encourage the maintenance, enhancement and extension of networks of multi-functional spaces, routes and key areas of Green Infrastructure, as an integral part of the urban fabric and to improve urban and rural connectivity.* *C. At a district level, Green Infrastructure is considered to be land which already contributes towards, or has the potential to contribute towards the following:* *Retention, creation and enhancement of important habitats and ecological networks* *Resilience to climate change and sustainable design* *Important attributes of natural greenspace, connectivity to other greenspaces and a local need for open space* *6. Improving opportunities for walking, cycling and horse-riding, establishing strategic green links and enhancing the rights of way network in urban and rural parts of the district*
Planning for Places **5.4 Environment** **Policy EN4: Landscape**	*Development Decisions as well as Plans, policies and proposals should make a positive contribution towards the conservation,` management and enhancement of the diversity of landscapes within the District of: …South Bradford* *This should use the approach set out in the Landscape Character Assessment SPD.* *B. The following criteria will also be used to assess whether change can be considered acceptable:* *1. The potential for adverse landscape and/or visual effects...* *3. The opportunity to contribute towards positive restoration of landscapes, particularly in the urban fringe, achieve greater habitat connectivity, enhancement of characteristic semi-natural vegetation and accessible natural greenspace*

Policy No	Policy
	In circumstances where impacts can be managed and the degree of change made acceptable, contributions need to relate to the scale of the project under consideration, and the significance of any assets affected. *Where there is potential for adverse landscape and/ or visual effects, a landscape and visual impact assessment or appraisal will be required. Proposals also need to fulfil the criteria set out in Policy DS2 Working with the Landscape.*
Policy EN5: Trees and Woodland	*The Council will seek to preserve and enhance the contribution that trees and areas of woodland cover make to the character of the District.* *A. In making decisions on planning applications and in local plans, trees and areas of woodland that contribute towards:* *The character of a settlement or its setting or the amenity of the built-up area* *Valued landscapes will be protected.* *C. The planting of additional trees and woodland will be encouraged and* *proposals for development should result in no net loss of woodland.*
Policy DS2: Working with the Landscape	*Planning Decisions including Plans and development proposals should take* *advantage of existing features, integrate development into the wider landscape and create new quality spaces. Wherever possible designs should:* *A. Retain existing landscape and ecological features and integrate them within developments as positive assets.* *B. Work with the landscape to reduce the environmental impact of development.* *C. Take opportunities to link developments into the wider landscape and greenspace networks.* *D. Ensure that new landscape features and open spaces have a clear function, are visually attractive and fit for purpose, and have appropriate management and maintenance arrangements in place.* *E. Use plant species which are appropriate to the local character and conditions.*

Calderdale Unitary Development Plan, (2009)

A7.22 The Statutory Development Plan for Calderdale is the Replacement Calderdale Unitary Development Plan (RCUDP) which was adopted in 2006 and revised in 2009. The Metropolitan Borough of Calderdale is located some 3km to the west of the Revised Development site and is lies within the potential Zone of Visual Influence defining the study area for the LVIA. Refer to **Table A7.4**: Calderdale UDP for policies relevant to the LVIA.

Table A7.4 Calderdale UDP - policies relevant to the LVIA

Policy No	Policy
Policy GBE1: The contribution of design to the quality of the built environment	*All new development will be required to achieve high standards of design that makes a positive contribution to the quality of the local environment. In particular development should:-* *Promote sustainable forms of development and embrace the objectives of sustainable design;* *Promote community safety including crime prevention measures;* *Create or retain a sense of local identity;* *Create roads, footpaths and public spaces that are attractive and safe, and put sustainable forms of transport and in particular walking, cycling and public transport, before other motor vehicles;* *Protect and enhance the District's architectural and historic heritage, landscape and amenity, and contribute to its special character; and* *Not harm the character or quality of the wider environment and improve local biodiversity.*

Calderdale Local Plan Initial Draft (July 2017)

A7.23 The draft Local Plan for Calderdale Council has been published, undergone consultation and is awaiting Examination. A summary of the key relevant draft policies in relation to Landscape are listed in **Table A7.4** below:

Table A7.5 Calderdale Local Plan Initial Draft (2017) - policies relevant to the LVIA

Policy No	Policy
20 Green Infrastructure and Natural Environment:	*Policy GN1: Securing green infrastructure provision* *Policy GN2: A joined up green infrastructure network* *Policy GN3: Natural Environment* *Policy GN4: Landscape Character* *Policy GN5: Trees*

Assessment Methodology

Methodology

A7.24 The methodology for this LVIA is based on the 'Guidelines for Landscape and Visual Impact Assessment', Third Edition: (GVLIA 3, 2013) (Ref A7.8), edited by the Landscape Institute and the Institute of Environmental Management and Assessment. This document is regarded as the industry standard and sets out the principles for the assessment process. Other guidance and landscape character assessments considered in this chapter include:

- Landscape Institute, Position Statement Green Infrastructure and Integrated Approach to Land Use, (2013), [Ref A7.9];
- Photography and Photomontage in Landscape and Visual Impact Assessment Landscape Institute Advice Note 01/2011. [Ref A 7.10];
- Natural England, An Approach to Landscape Character Assessment (2014);-[Ref A7.11];
- The Countryside Agency and Scottish Natural Heritage, Landscape Character Assessment; Guidance for England and Scotland, (2002), [Ref A7.12];
- Countryside Commission English Nature, The Character of England: Landscape, Wildlife and Natural Features, (1996), [Ref A7.13];
- Kirklees Council Landscape Architects, Former North Bierley Waste Water Treatment Works, Cliff Hollins lane, Cleckheaton Landscape Character Assessment, (2015), [Ref A7.14];
- Land Use Consultants, South Pennines Landscape Character Assessment, report to Standing Conference of South Pennines Authorities (SCOSPA), (1999), [Ref A7.15];
- City of Bradford Metropolitan District Council, Local Development Framework for Bradford Landscape Character Supplementary Planning Document, (2008), [Ref A7.16];

A7.25 Professional judgement is a critical part of LVIA with regard to gauging the significance of identified effects. While there is some scope for quantitative measurement, much of the assessment relies on qualitative judgement. It is important that such professional judgement is based on a logical and transparent methodology. This section of the LVIA sets out the framework upon which the assessment has been made.

Landscape and Visual Effects

A7.26 As recommended in the GVLIA, in this assessment the term 'impact' is defined as the action being taken, and the term 'effect' is defined as the change resulting from that action.

A7.27 It is the purpose of this LVIA to give detailed consideration to the landscape and visual effects.

A7.28 Assessment of **landscape effects** is defined by the GVLIA as "*assessing effects on the landscape as a resource in its own right*". Components of the landscape that are likely to be affected by a Revised Development are referred to as *landscape receptors* and can include individual elements, specific aesthetic or perceptual qualities and the character of the landscape. Landscape effects derive from changes in the physical landscape which may give rise to changes in its character and how this is experienced. This may in turn affect the perceived value of the landscape.

A7.29 Assessment of **visual effects** is defined by the GVLIA as "*assessing effects on specific views and on the general visual amenity experienced by people*." People who will be affected by changes in views or visual amenity are referred to as *visual receptors* and visual effects relate to the changes that arise in the composition of available views as a result of changes to the landscape, to people's responses to the changes, and to the overall effects with respect to visual amenity.

A7.30 Landscape and visual effects can be negative (adverse) or positive (beneficial) in their consequences for landscape or for views and visual amenity. They can be direct, indirect, secondary, cumulative, short-, medium- and long-term, permanent or temporary.

A7.31 The level of significance ascribed to landscape and visual effects depends primarily on the interaction between, and combination of, the sensitivity of the landscape/visual receptor and the scale, or magnitude of the predicted effect of the development.

A7.32 To assess levels of **sensitivity**, both the **susceptibility** of the receptor to the type of change arising from the Revised Development and the **value** attached to the receptor, need to be considered. In assessing the landscape value, a measure of the physical state of the landscape may be made in terms of its intactness from a visual, functional or ecological perspective. It also 'reflects the state of repair of individual features and elements which make up the character in any one place' (Countryside Agency and Scottish Natural Heritage, 2002). [Ref A7.12]

A7.33 In considering the **magnitude of change**, judgements need to be made about the size and scale, geographical extent, duration and reversibility of the effect identified. Once levels of receptor sensitivity and the magnitude of change resulting from a specific effect have been determined, a judgement can be made about the overall **significance** of that effect.

A7.34 In order to establish transparency of the assessment process used in the LVIA, tables below show the criteria for the classification of:

- Criteria for Assessing Landscape Value
- Criteria for Assessing Magnitude of Change for Landscape Receptors
- Criteria for assessing the susceptibility of visual receptors to change
- Criteria for assessing magnitude of change for Visual Receptors
- Correlation of Sensitivity & Magnitude of Change to determine Significance of Effects.

Study Area

A7.35 The location and extent of the application site is shown in Figure A7.1: Location Plan (**Addendum Technical Appendix A7.0**)

A7.36 The Application Site covers two areas. The larger is approximately 23ha, including land associated with the former waste water treatment works and adjacent agricultural land.

The site of the proposed car park is approximately 0.3 ha and is currently an area of damp pasture used for grazing.

A7.37 The extent of the study area (refer to Figure A7.7: 5km Study Area) is based on a 5km radius from the centre of the application site in all directions, as determined by the initial Zone of Theoretical Visibility (ZTV). This was prepared with the initial baseline desk studies and field evaluation. The context of the Revised Development is shown on Figures A7.12 & A7.13.

A7.38 Figure A7.2 Parameters Plan illustrates the potential location for landscape mitigation. The mitigation would consist of structure planting on the site perimeter with soft landscape provided alongside the water bodies and within the development itself. The final layout would change depending on the form of the development associated with a detailed planning application. The proposed car park for the school is illustrated on KPP Architects drawing 1773-01-203 and Figure A7.9 Proposed School Parking Layout.

A7.39 An initial Zone of Theoretical Visibility, (ZTV) was prepared using indicative development plateau levels supplied by KPP Architects (refer to Figure A7.3), based on the maximum height of the commercial units at 18.0 metres. (Refer to Figures A7.10 Zone of Theoretical Visibility). A ZTV is based entirely on the effects of topography and does not take into account the screening effects of built form and vegetation. The ZTV indicates that the Revised Development may be seen in locations along the river valley that is aligned northwest to southeast. Depending on the form of the development it is unlikely that the site will be visible from Bradford and most of Oakenshaw, to the north, due to the intervening highway and built form.

A7.40 The Zone of Visual Influence (ZVI) takes into account the screening effects of intervening vegetation and urban form in addition to topography (refer to Figures A7.11 Zone of Visual Influence). The ZVI's and field observations have shown the site is visible from the M606 from locations south of the Euroways trading estate, when travelling travelling south. The site is visible from the M62 (Junction 26 area). The motorway embankment will act as a barrier to views from the south. It is likely that the Revised Development will be seen from higher ground to the northeast from isolated properties on Cliff Hollins Lane, these forming the main likely residential receptors.

Surveys

A7.41 The initial site visits were carried out in April and May 2014. These were used to identify current features of the landscape within and surrounding the site, and how these elements contribute to and combine to establish the landscape's character of the area. Subsequent site visits were carried out in August 2014 and June 2015, as the Masterplan was developed. Further site visits were carried out in September 2016 and April 2017 and field photography updated.

Consultation

A7.42 The locations for photomontage production were agreed with Kirklees Council Planning Officers during pre-application consultations (refer to Figure 7.20 Photomontage Viewpoint Location), (**Addendum Technical Appendix A7.0**)

Significance Criteria – Assessment of Landscape Effects

A7.43 Assessing the Landscape Effects requires methodical consideration of each effect identified and, for each one, assessment of the sensitivity of the landscape receptors and the magnitude of the effect of the landscape.

A7.44 The initial landscape appraisal began with a baseline study, which included data collection and a desktop review of information relating to the components, character and scenic quality of the townscape, and landscape, including:

- Ordnance Survey maps
- Aerial photographs
- Relevant planning policy and guidance
- Landscape, historic and environmental designations; and
- National, regional and local scale landscape character assessments.

A7.45 To assist the understanding of landscape value, landscape designations over a study area defined by a 5km radius from the centre of the site were identified using Defra's 'MAGIC' web-based data base.

A7.46 Plans of the Revised Development produced by KPP Architects were used to determine the potential effects of the scheme on landscape features and character. A number of masterplan options were then developed for discussion.

A7.47 The objective of the baseline study for the landscape is to provide an understanding of the landscape in the area that may be affected – its constituent elements, its character, spatial patterns, its geographic extent, its history, its condition, the way in which landscape is experienced and the value attached to it. This information is then reviewed alongside the description of the Revised Development to form the basis for the identification and description of the changes that will result in the landscape effects of the proposal.

Landscape Sensitivity

A7.48 In order to assess landscape receptors in terms of their sensitivity, judgements of their susceptibility to the Revised Development and the value attached to the landscape are combined and assessed.

A7.49 The susceptibility to change is the ability of the landscape receptor to accommodate the Revised Development without undue consequences for the maintenance of the baseline conditions. Judgements on the susceptibility are recorded as High, Medium or Low and include assessment of the following:

- Landscape character and quality – the main consideration, based on collective landscape characteristics.
- Individual elements or features within the landscape.

- Landscape scale – the relative size of the main landscape elements and components.

- Particular aesthetic and perceptual aspects.

A7.50 Value of the landscape receptors is established in the baseline conditions and covers the value of the Landscape Character Types and Areas that may be affected, based on review of any designations at both national and local level. Where there are no designations judgement is based on the value of individual contributors to landscape character, especially the key characteristics, which may include individual elements of the landscape, particular landscape features, notable aesthetic and perceptual or experiential qualities.

A7.51 The table below (**Table A7.6**) provides an indication of the values attached to landscape designations when assessing landscape value. It should be noted that the presence or absence of designations does not dictate the value assessment and are only indications of likely value judgements.

Table A7.6 – Criteria for Assessing Landscape Value

Value		Typical Criteria	Typical Scale	Examples
High	Exceptional	High Importance and rarity. No/very limited potential for substitution.	International, National.	World Heritage Sites, AONB, National Park, National Scenic Area
	High	High Importance and rarity. Limited potential for substitution.	National, regional, local	AONB, National Park, National Scenic Area
Moderate	Moderate	Medium importance and rarity. Limited potential for substitution.	Regional, local.	Regional Scenic Area.
	Moderate-low	Medium importance and rarity. Some/good potential for substitution.	Regional, local.	Undesignated but value expressed in demonstrable use.

Value		Typical Criteria	Typical Scale	Examples
Low	Low	Low importance and rarity.	Local.	Area identified as having some aspect of local value but with scope for improvement.
	Very low	Low importance and rarity.	Local.	Area identified for recovery/enhancement.

A7.52 The sensitivity of the landscape receptors is calculated by combining the susceptibility to change and the landscape value. If the susceptibility to change is high and the landscape value is high, then the sensitivity of the landscape would be judged as high. If the susceptibility to change is low and the landscape value is low, then the sensitivity of the landscape receptor would be judged as low.

Magnitude of Change for Landscape Receptors

A7.53 Using terminology from the '*Guidelines for Landscape and Visual Impact Assessment*, 2013 (Ref A7.8), The magnitude of change for landscape receptors arising from the Revised Development is classified as substantial, moderate, slight or negligible. The magnitude is dependent on interpretation of a number of factors, but unlike assessments of sensitivity, these are largely quantifiable. Each effect of the Revised Development on landscape receptors was assessed in terms of its size or scale, the geographical extent or the area influenced and its duration and reversibility. This determined the magnitude of landscape effects. The Revised Development is considered to be permanent and non-reversible throughout this report.

Table A7.8: Criteria for assessing magnitude of change for Landscape Receptors

Level	Typical Criteria
Substantial	Total loss of or major alteration to key elements/features/characteristics of the baseline landscape. Introduction of elements considered to be totally uncharacteristic in the context of the baseline landscape altering the aesthetic or perceptual aspects of the landscape. Removal of elements considered to be important aesthetic or perceptual aspects of the landscape. Landscape effects felt over a large geographical scale, influencing several landscape types or character areas.
Moderate	Partial loss of or alteration to key elements/characteristics of the baseline landscape. Introduction of elements that may be prominent but may not necessarily be considered substantially uncharacteristic in the context of the baseline landscape and moderately altering the aesthetic or perceptual aspects of the landscape.

Level	Typical Criteria
	Removal of elements considered to contribute to aesthetic or perceptual aspects of the landscape. Landscape effects at the scale of the landscape type or character area within which the proposal lies.
Slight	Minor loss of or alteration to key elements/features/characteristics of the baseline landscape. Landscape effects within the immediate setting of the site and at site level.
Negligible	Very minor loss of or alteration to key elements/features/characteristics of the baseline landscape.

Assessment of Visual Effects

A7.54 The assessment of visual effects compares the quality of the existing situation (i.e. the quality pertaining without the scheme), to that which would result if the development were constructed, and the degree of change. A new development can cause deterioration, no change or improvement in visual amenity.

A7.55 Following the establishment of the Study Area, detailed site surveys were carried out to establish an accurate visual envelope and to assess the likely impact on residential properties, footpaths, highways and public spaces. The visual envelope defines the area of land from which there is a view of any part of the Revised Development and takes into account intervening vegetation and urban form, in addition to topography (refer to A7.10 and A7.11).

A7.56 The assessment of visual impact was undertaken by way of site visits in April, May & August 2014, June 2015, September 2016 and April 2017, and the production of photomontages following agreement of viewpoints with Kirklees Council.

A7.57 The viewpoints selected for the photomontages represent different views and viewer types. The viewpoints are in different directions from the site and are at varying elevations.

A7.58 All of the viewpoints were visited by TGP and photographed by a professional photographer. A wireframe model was generated and photomontages produced for each of the viewpoints to identify the scale, arrangement and visibility of the development. The photomontages were reviewed to assess how natural and built screening would affect the visibility of the development and the sensitivity of each viewpoint or viewer (refer below).

Visual Sensitivity

A7.59 Visual receptors are people, meaning the particular person or group of people likely to be affected at a specific viewpoint. As in the landscape assessment the visual sensitivity is assessed in terms of the susceptibility to change in views and visual amenity as well as the value attached to particular views.

A7.60 The susceptibility of different visual receptors to changes in views and visual amenity depends upon the occupation or activity of people experiencing the view at different locations and the extent to which their attention or interest may therefore be focused on the views.

A7.61 As in the landscape assessment, visual receptor susceptibility to change is defined as high, medium, low or negligible as follows:

Table A7.8: Criteria for assessing the susceptibility of visual receptors to change

High	- Residents at home - Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience - Beauty spots, public viewing areas and picnic areas - people, whether residents or visitors, who are engaged in outdoor recreation, including the use of public rights of way, whose attention or interest is focused on the landscape and on particular views - Communities where views contribute to the landscape setting enjoyed by residents in the area
Medium	- Residential properties with less significant views from living rooms/gardens - Walkers using local networks of footpaths and tracks - Transport users of local roads, train lines, rivers and canals
Low	- Those engaged in outdoor sports or recreation which does not involve or depend upon appreciation of views of the landscape - Those using major roads and motorways in the region - People at their place of work whose attention may be focussed on their work or activity, not on their surroundings, and where the setting is not important to the quality of working life
Negligible	- Views from towns, conurbations and heavily industrialised areas

A7.62 Judgements are also made about the value attached to the views experienced. This takes into account the following:

- Recognition of the value attached to particular views, for example in relation to heritage assets, or though planning designations
- Indicators of the value attached to views by visitors, for example through appearances in guidebooks or on tourist maps, provision of facilities for their enjoyment and references to them in literature or art.

A7.63 The sensitivity of the visual receptors is calculated by combining the susceptibility to change and the visual value. If the susceptibility to change is high and the visual value is high, then the sensitivity of the visual receptor would be judged as high. If the susceptibility to change is low and the visual value is low, then the sensitivity of the visual receptor would be judged as low.

Magnitude of Change for Visual Receptors

A7.64 The magnitude of change for visual receptors arising from the Revised Development is classified as substantial, moderate, slight or negligible, again dependent on interpretation of a number of factors, but unlike assessments of sensitivity, these are largely quantifiable. Each effect on visual receptors then needs to be assessed in terms of its size or scale, the geographical extent or the area influenced and takes into account:

- Distance of viewpoint from the development;
- The field of view occupied by the development
- Orientation or angle of view to the centre of the development;
- Background to the development;
- Extent of other built development, especially vertical elements.

Table A7.9: Criteria for assessing magnitude of change for Visual Receptors

Level	Typical Criteria
Substantial	A large number of sensitive receptors experiencing a major or fundamental change in nature of the baseline view, particularly in near views with the baseline urban skyline substantially changed.
Moderate	A moderate, but not fundamental, change in nature of view affecting a notable number of sensitive receptors. Open, uninterrupted views with some middle distance obstruction of part of that view resulting from the Revised Development; baseline urban skyline not adversely infringed in view typically seen over medium/long distance,
Slight	Minor but non material change in nature of view; long distance views across urban landscape panorama, or restricted views (upstairs bedroom windows only) with relatively few receptors affected.
Negligible	Changes unlikely to be perceived by the majority of visual receptors.

Significance of Effects for Landscape and Visual Receptors

A7.65 The purpose of an LVIA in the context of an EIA is to identify any significant effects on landscape and visual amenity arising from the Revised Development. In this LVIA the level of effect on landscape and visual amenity arising from the combined effects of sensitivity and magnitude are assessed and then professional judgement applied to assess whether the effect is significant or not.

A7.66 **Table A7.10** provides a guide to correlating sensitivity to change and magnitude of change, in order to determine the significance of effects. However, professional judgement using the combined criteria of sensitivity and magnitude is used to determine the overall level of effects. The level of landscape and visual effects has been assessed as major, moderate, minor or none. As is now common practice, these categories have been determined by considering the combination of landscape or visual sensitivity with the predicted magnitude of change.

Table A7.10: Correlation of Sensitivity & Magnitude of Change to determine Significance of Effects.

Landscape & Visual Sensitivity	High	**Moderate/ Minor**	**Moderate**	**Major/ Moderate**	**Major**
	Medium	Minor	Moderate/ Minor	Moderate	**Major/ Moderate**
	Low	Minor/ None	Minor	Moderate/ Minor	**Moderate**
	Negligible	None	Minor/ None	Minor	Moderate/ Minor
		Negligible	Slight	Moderate	Substantial
	Magnitude of Change				

A7.67 In this LVIA, effects described as Major and Major/Moderate are considered to be significant as required by the Town and Country Planning (England and Wales) (Environmental Impact Assessment) Regulations 2017 [Ref A7.1]. These are the effects that the assessor considers to be material in the decision making process.

Mitigation Measures

A7.68 In accordance with the EIA Regulations, measures proposed to prevent/avoid, reduce and where possible offset or remedy (or compensate for) any significant adverse landscape and visual effects should be described. The GLVIA 3rd Edition states that *'measures which are proposed to prevent, reduce and where possible offset any significant adverse effects (or to avoid, reduce and where possible remedy identified effects), including landscape and visual effects, should be described'.*

A7.69 In practice such mitigation measures are now generally considered to fall into three categories, as defined by the Ref A7.8 Guidelines for Landscape and Visual Assessment, (2013):

- *'standard construction, design and operational management practices for avoiding and reducing environmental effects;*
- *primary measures, developed through the iterative design process, which have become integrated or embedded into the project design;*

- *secondary measures, designed to address any residual adverse effects remaining after primary measures and standard construction practices have been incorporated into the scheme.'*

A7.70 The primary mitigation measures and the construction and operational management practices are included within the Baseline Conditions description, as are the possible effects identified early on and the design responses that have been introduced, for example modifications to siting, access, layout, buildings, structures, ground modelling and planting. It can be expected that both these types of mitigation measure will definitely be implemented as they are to be an integral part of the scheme. They could therefore be secured by conditions on a consent.

A7.71 Secondary mitigation measures are those that are not built into the final development proposals and are considered in relation to the assessment of the landscape and visual effects of the scheme as the means of addressing the significant adverse effects identified. As they are not incorporated in the scheme being assessed, there will need to be careful consideration of how they can be secured.

Baseline Conditions

Site Description

A7.72 This section provides an objective and factual description of the existing landscape features and character of the landscape within and immediately surrounding the application site and the study area defined by the ZTV. The landscape context and photographs of the site are illustrated in Figure A7.12 Landscape Context, Figure A7.13 Wider Landscape Context, Photograph Location Plans and Plates A7.22 to A7.37. (Refer to Chapter 7: **Addendum Technical Appendix A7.0**)

A7.73 The former North Bierley Wastewater Treatment Works lies between Bradford and Cleckheaton at the M606 and M62 junction. The village of Oakenshaw is northwest of the site but is separated from the site by the M606. The Euroways Trading Estate is located directly to the north of Oakenshaw and the site. The suburbs of Bradford extend along major roads (including the A641, A650 and M606) out of the city into the study area. Between these 'fingers' of urban character are areas of green open space that extend towards the M62. The site is located at the end of corridor formed by the M606 and the Euroways Trading Estate.

A7.74 The former Wastewater Treatment Works (WwTW) occupies almost half of the Site. There are two disused buildings associated with the WwTW within the site boundary. These buildings are located at the end of the access road and at the entrance of the WwTW (Plate 7.1). There is disused infrastructure from the WwTW south of the buildings including fifteen circular settlement tanks, eight smaller rectangular tanks and four linear tanks at the southernmost end of the site (Plates 7.2 & 7.3). These tanks contain filter media with some plants growing through (Plate 7.4). The WwTW includes concrete, tarmac and gravel near the buildings at the northern end with gravel and rough grass further south (Plates 7.5 & 7.6). There are a number tracks within the site which is currently enclosed by perimeter security fencing (Plates 7.7, 7.8 & 7.9). (**Addendum Technical Appendix A7.0**)

A7.75 Beyond this perimeter fencing and west of the WwTW are small gently sloping fields used for rough grazing with former hedgerows and isolated areas of hawthorn hedging (Plate 7.10). Hanging Wood runs along the eastern boundary comprising of mature Oak, Sycamore, Ash,

Poplar and Birch. This wooded area is continued beyond the M62 to the east by Hunsworth Little Wood and Hunsworth Great Wood. Further east of Hanging Wood and north of the access road there is a resemblance to a parkland landscape with small copses of oak trees and open rolling fields.

A7.76 Other buildings within the immediate vicinity of the site are a disused textile mill (Oak Mills) and small conglomerations of residential properties to the north including a six bungalows, three 2-storey houses, the village of Lower Woodlands and Woodlands Primary School at the northern end of the site on Mill Carr Hill Road. The site for the proposed car park adjacent to the school is illustrated in Figure A7.9 and Plate 7.16. The site is characterised by damp grassland used for grazing. Along Cliff Hollins Lane the topography rises and there are several farms and associated outbuildings ascending the lane.

A7.77 Access to the site is from Bradford road, west of the M606, into Oakenshaw and right under the motorway after the Church of St Andrew. This underpass leads to Mill Carr Hills Road before turning right on Cliff Hollins Lane to reach the access road. The spire of the Church of St Andrew is a prominent local feature within the landscape.

A7.78 To the west and south of the site the strong linear features of the M606 and M62 and their associated structure planting define the site boundary. The M62 passes the southern end of the site and the M606 runs along the western edge. The Motorway junction is elevated with wooded embankments, preventing views from the south. However, the site can be seen from the slip road of the M606 and the bridge of the M62. Other roads include Bradford Road to Oakenshaw but views to the site from here are blocked by the M606 and associated tree planting.

A7.79 A public footpath passes through the northern end of the site along the access road before ascending into Hanging Wood east of the site.

A7.80 The local topography (refer to Figure A7.15, Topography) illustrates the undulating landform, dissected by river valleys flowing from northwest to south east. The site lies on the valley floor, directly adjacent to the east of the M606 motorway. On the western perimeter the land rises to the wooded slopes of Hanging Wood. The surrounding hills provide natural screening of distant views to the east and west. The site is located at between 90m and 110m Above Ordnance Datum (AOD). The local topography rises to the north east to East Bierley at 215m AOD, to the west at Wyke to 165m AOD and to the North West towards Buttershore to 270m AOD. The Revised Development is associated with the valley formed by Hunsworth Beck which runs from the north west to the south east. Hunsworth Beck is a deeply incised, narrow water course within the woodland edge along the eastern site boundary. This is joined by Cockleshaw Beck that runs from Chatts Wood.

Sensory Experience

A7.81 The site entrance is characterised by disused industrial buildings and a busy site compound. On entering the former waste water treatment works an immediate feeling of unease is experienced with large derelict industrial buildings in various states of disrepair blocking the view to the rest of the site. Beyond this the structures associated with the Wastewater Treatment Works are mostly at ground level allowing for an open landscape bordered by sloping fields, the occasional hedge, busy roads and woodland. The noise from the road is prominent in the background. The sound of the Hunsworth Beck is audible at a local level. The sensory experience as one walks through the site is mixed, there is a combined sense of

unease but also interest. Natural regeneration of native planting has occupied much of the disused infrastructure.

Landscape Character

A7.82 A review of the following landscape character assessments and landscape capacity studies was undertaken:

- Natural England National Character Areas (Updated 2014) [Ref A7.11];
- Kirklees Council Landscape Architects Former North Bierley Waste Water Treatment Works, Cliff Hollins Lane, Cleckheaton Landscape Character Assessment (2015) [Ref A7.14];
- Land Use Consultants *South Pennines Landscape Character Assessment*, report to Standing Conference of South Pennines Authorities (SCOSPA) (1999) [Ref A7.15];
- City of Bradford MDC Local Development Framework for Bradford, Landscape Character Supplementary Planning Document [Ref A7.16]

National Landscape Character Areas

A7.83 Natural England has divided England into 159 National Character Areas (NCAs) [Ref A7.11], which classify similar landscape characteristics into broad character areas at a national scale. Each profile includes a detailed description of the natural and cultural features that shape landscapes, discussion on landscape change (how landscape has evolved over time and key drivers for ongoing change), suggested opportunities, key facts and figures, and broad analysis of each area's characteristics and ecosystems.

A7.84 The site is within in the National Character Area 37: Yorkshire Southern Pennine Fringe described by Natural England as 'a transitional landscape from the upland areas of the Southern Pennines NCA in the west through to the low-lying land of the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA to the east' [Ref A7.15]. On a more local scale the area has been classified into Local Authority level Landscape Types. Within this framework the Site is located within 'Wooded Rural Valley'. It is flanked by 'Coalfield Edge Urban Field Farmland' to the northeast and southwest filling the gap between the M62 and the 'Urban' Bradford.

A7.85 Within the 5km study area NCA 37 is the only National Character Area. The relevant key characteristics of this character area include:

- A transitional landscape dissected by steep-sided valleys, dropping from the high gritstone hills in the west to lower land in the east, and thus creating an important backdrop to the many industrial towns and villages within and beyond the NCA.
- Sandstones and gritstone beds of Millstone Grit (Namurian) age underlying smooth hills and plateaux in the west. These are overlain in the east by beds of sandstone, siltstone and mudstone of Coal Measures age.
- Rivers creating a deeply dissected landscape, with high plateaux cut by steep-sided valleys, and fanning out in 'fingers' across valleys of the NCA.

- Treeless hill tops with tracts of rough grazing and extensive areas of enclosed pasture to the west, but with broadleaved woodland on steeper valley sides, giving the impression of a well-wooded landscape, especially to the north and west of Sheffield.
- Predominantly pastoral farming, especially in western areas, with a shift to more arable land in the drier eastern areas.
- Boundary features that change from distinctive patterns of drystone walls on the upland hills, to hedgerows becoming the predominant field boundary in the east.
- Close conjunction between rural landscapes and the rich industrial heritage of the urban areas, including settlements associated with the textile industry, with large mills and tall chimneys, and large factories and forges associated with the iron, steel and manufacturing industries
- Urban development constrained within valley floors and upside slopes, with location and layout strongly influenced by the landform.
- Industrial wealth revealed in magnificent civil architecture in town centres, notably Bradford, Halifax, Huddersfield and Sheffield, and several stately homes with designed parklands.
- Evidence of bronze-age and Roman habitation still present on uplands, and old pack-horse routes that once joined settlements across the Pennines still in place, or now forming modern major road routes.
- Extensive and dramatic views from higher land out over lower-lying land to the east, even from within urban areas.
- Several reservoirs contained within narrow valleys contributing a distinct character as well as providing popular places to visit.
- Small patches of fragmented priority habitats providing important refuges locally for wildlife. Grassland mosaics are particularly important in supporting waders and the twite that breeds on adjacent moorland areas; lowland woodland is also an important feature.
- In places a dense network of roads and urban development, with many road, rail and canal routes crossing the NCA, and a high density of footpaths throughout.

Regional Landscape Character Types within the Study Area

A7.86 The Kirklees Council Landscape Architects Landscape Character Assessment for North Bierley (Ref A7.14) identifies two landscape types: 1 Fringe farming and 2 Industrial. Two character areas are identified, '*one of a poor degraded site with empty buildings now barely used; and the pastoral land adjacent to it dominated by the former treatment plant'*. The landscape character of the Fringe farming landscape Type 1 is described as weak and its condition is declining due to the pressures of the motorway and industrial dereliction nearby. The study states that the site will be strengthened by sensitive development. Landscape Type 2 Industrial is described as '*a struggling area of abandoned industrial land heavily affected by dereliction and motorway noise.'* The landscape character of Landscape Type 2 is identified as '*weak and its condition poor due to the industrial dereliction and abandoned usage of this*

site, and is declining fast.' The site will benefit by the creation of new and sensitive development'.

A7.87 The Landscape Character Types defined by the South Pennines Landscape Character Assessment within the study area are illustrated on Figure 7.21. [Ref 7.15]. On a more local scale the landscape has been classified into Local Authority level landscape types and areas. Within this framework the Site is located within type G Wooded Rural Valley and area G11 Batley Fringe Incised Valleys. It is flanked by Coalfield Edge Urban Field Farmland to the northeast and southwest filling the gap between the M62 and the 'Urban' Bradford.

A7.88 Bradford Metropolitan District Council's Landscape Character Supplementary Planning Document [Ref A7.16] Volume 5 South Bradford identifies two landscape types, Industrial corridor and Enclosed pasture to the north of the application site. The proposed car park is contained within Enclosed pasture. The study describes south Bradford as an urban fringe landscape where motorway traffic and massive brightly coloured distribution centres abut traditional stone farmsteads and hedgerow bound pasture. The policy guidelines for Enclosed pasture states that 'the south and eastern areas are under pressure for development and any proposals for this area require careful consideration n to ensure that there is a strong landscape content, particularly tree planting, to strengthen the edge of that development and to screen adjacent industrial land uses and more distant views. The Industrial Corridor landscape policy guidelines states that the industrial corridor has a weak character, low historic continuity and is visible and enclosed by the urban and industrial core, which means that it is not sensitive to change.

A7.89 The regional landscape types within the study area as defined by the South Pennines Landscape Character Assessment [Ref. A7.15] are described below:

E – Rural Fringes

A7.90 The rural fringes form a lower lying domesticated landscape surrounding the uplands. Rarely more than 200 metres above sea level the conditions are less harsh with gentler slopes and a milder climate. These sheltered, more hospitable fringes are settled and intensely farmed creating a small scale, complex landscape, of more varied landform and vegetation cover than is typical of the higher areas. Trees thrive and are a distinguishing feature of this landscape type occurring around farmsteads, along stone wall boundaries and in small – medium sized woodland blocks. Farming appears more profitable and the majority of the fields are improved grassland grazed by a mix of both cattle and sheep and managed for a silage crop. Settlement includes scattered farmhouses, which often include a range of modern outbuildings, dispersed rural dwellings as well as numerous small groups of houses/villages frequently with newer suburban infill and edge developments. An intricate network of lanes and roads crosses the area and links to the adjacent towns and cities which surround the South Pennines. The proximity of the urban centres exerts an influence on landscape character with urban fringe land uses evident in many areas and pressures for development.

G – Wooded Rural Valleys

A7.91 The steep-sided wooded valleys, which dissect the high South Pennine moorland, are a special feature of the area. They have a secluded, intimate character derived from the deeply incised topography and abundant woodland which clothes the valley sides often blocking the sky from view. Although they exist in close proximity to the densely urbanised and industrial valleys, these side valleys are largely hidden and inaccessible except by foot. Their depth

and extent is surprising and creates the sense of a hidden, secret landscape. The swift-flowing streams which tumble over the hard gritstone rocks are edges with a luxuriant carpet of mosses and ferns. These waters once provided the power for the early industrialisation of the region and the side valleys are lined with the remains of former mill sites.

K: Coalfield Edge Urban Fringe Farmland

A7.92 The farmland of the coalfield edge forms part of the long eastern dip slope of the Pennines, which slopes gently form the high moorland towards the extensive urban conurbations of West Yorkshire. The slope is divided into a series of undulating ridges by small streams. The ridge top summits provide the location for a number of settlements including Denholme, Queensbury, Thornton and Shelf. Outward expansion of these settlements, which are not constrained by topography, has imposed a more suburban landscape. This 'urban fringe character' is reinforced but the dense network of roads that connect areas of development, as well as the long views of the industrial areas of Leeds and Bradford. The gritstone walls that subdivide the intervening farmland into medium large pasture fields provide one of the few unifying characteristics with the wider South Pennine area. Elsewhere the countryside character of this eastern edge is being eroded by a combination of modern housing, pylons, communications infrastructure, mineral extraction. Landfill sites and other non-agricultural and urban fringe land uses.

O: Industrial/Business Parks

A7.93 This urban type includes Victorian industrial development associated with coal mining and woollen mills as well as more recent large scale commercial sheds, distribution buildings and business or retail parks. The former developments are often built of local stone or brick and have a unity of design and scale. The latter are built of a range of materials and may form discrete and sometimes extensive areas of development on the outskirts of major settlements or along river valleys (where they occur in lowland river valleys they are classified under the Industrial Lowland Valley type). Occasionally they may be located in isolated elevated locations or along motorway corridors where communications are good. Buildings are large in scale and development as a whole may also cover an extensive area.

U: Urban

A7.94 The historic urban cores that can be found within the South Pennines typically are small, characterful areas at the heart of the larger settlements. A historic church and market place are often sited at the central convergence point of the principal radial route. Most historic urban cores have a denser urban fabric that other parts of the town, with tall red brick or stone buildings and angular streets. There is a general lack of open space and vegetation, although market squares do survive in some towns. In some cases the historic core appears as an isolated island within later development. This may result from the demolition and re-planning of town centres, or from the fusion of isolated small towns by expansion of nearby settlements. Overall, the most enduring feature of the historic urban cores is the organic, winding arrangement of streets and alleys and the distinctive character of historic public buildings.

A7.95 In surrounding residential and suburban areas, the townscape includes a wide variety of architectural styles and layouts. Areas dating from the Victorian and Edwardian periods may have a unity or architectural character associated with stone or brick terraces or tree lined streets. In the central part of the South Pennines local gritstone is the main building material, while to the south and west, especially in Rochdale, there is a predominance of red brick.

A7.96 More modern residential and suburban areas tend to be characterised by a spacious pattern of streets, low buildings, garages and gardens, although there are also examples of high-rise tower block estates, with communal amenity grassland and extensive parking.

Local Landscape character units within the Study Area

A7.97 The local landscape character units as defined by the South Pennines Landscape Character Assessment are:

- K1 Coalfield Edge Urban Fringe Farmland– Only found in one geographical area (refer to Type K Coalfield Edge Urban Fringe Farmland for description);
- U Urban – See above description;
- O Industrial/Business Parks – See above description;
- E8 Batley – Dewsbury Rural Fringes.

A7.98 This area comprises elevated farmland which forms a fringe to the urban area of Batley and Dewsbury. The area has a fragmented character including land uses such as country parks, golf courses, landfill and past mining, pony paddocks and pasture fields defined by stone wall enclosures creating a medium scaled pattern. The area is traversed by minor lanes as well as major roads and rail corridors. Overall it has a settled character and the most elevated areas can be open and afford views over adjoining developed areas.

G11 Batley Fringe Incised Valleys

A7.99 This area comprises the small stream valleys which penetrate the urban fringes or Batley forming shallow depressions in the surrounding fringe farmland. These valleys support a mixture of pasture and woodland and can have an enclosed, rural, secluded character despite their proximity to urban areas. They are generally unsettled and often inaccessible by road but particularly valued for recreation and contain numerous footpaths and the Oakwell Country Park.

G13 Clifton Beck

A7.100 Clifton Beck is a north-south orientated river valley which drains the upland coalfield edge to the north. It comprises steep wooded valley sides with areas of woodland pasture and pasture fields defined by stonewalls and hedges. The Calderdale Way Footpath route passes within this character type. Overall it is a small scale detailed landscape. To the south of Bailiff Bridge settlement becomes more prevalent.

Landscape Character & Quality Assessment of the Study Area

A7.101 A comprehensive assessment of the existing landscape character and quality of the study area was undertaken, by reference to existing landscape character studies and through field observation, to identify and evaluate significant environmental considerations for landscape assessment. In particular the landscape appraisal has been used to determine the capacity of the landscape to withstand change and disturbance. This assessment identifies various landscape character types and awards grades to each area based on a visual appraisal and analysis of survey data. Refer to Figure A7.16 Landscape Character Types and Figure A7.17 Landscape Quality. (**Addendum Technical Appendix A7.0**). A five point scale has been adopted for the qualitative assessment of the landscape:

- Highly Attractive;
- Attractive;
- Good Landscape;
- Ordinary Landscape and
- Poor Landscape.

A7.102 Acknowledgement is made of those features which enhance and detract from the landscape quality. As landscape quality classifications are ranked relative to one another within the limits of the study area only, they are not intended to imply any comparability with areas beyond, in either a regional or national context.

Landscape Sensitivity

Sensitivity of Landscape Character (within approximately 1km)

A7.103 The landscape in the immediate vicinity of the site is a combination of medium scale pastoral farmland, ancient woodland, highway corridor, residential housing, industrial buildings and electricity transmission infrastructure. Based on this variety of urban and semi-rural, the site's landscape character is considered to be of **low** sensitivity.

A7.104 The E8 Rural Fringe is a low lying domesticated landscape. It is considered to be of ordinary quality, low value and of Medium susceptibility to change when considering the Revised Development. The overall sensitivity of this character area is therefore considered to be **Low/Medium**.

A7.105 The G11 Wooded Rural Valleys are a special feature of the area. They are narrow valleys with abundant woodland and largely inaccessible except by foot despite being adjacent to densely urbanised areas. This character area is considered to be of good quality, moderate value and of Medium susceptibility to change when considering the Revised Development. The Site falls within this landscape character type. The overall sensitivity is therefore considered to be **Medium.**

A7.106 The G13 Wooded Rural Valleys are a special feature of the area. They are narrow valleys with abundant woodland and largely inaccessible except by foot despite being adjacent to densely urbanised areas. This character area is considered to be of good quality, moderate value and of Medium susceptibility to change when considering the Revised Development. The overall sensitivity is therefore considered to be **Medium**.

A7.107 The K1 Coalfield Edge Urban Fringe Farmland is an area of undulating ridges and streams and is home to a number of settlements whose expansion is not limited by topography. Farmland of medium to large scale pasture fields provide an intervening landscape between suburban settlements and more industrialised Leeds and Bradford. The quality of this landscape is considered good. This is a fairly common landscape and is of low importance and there its value is considered low. The Susceptibility to change is considered to be Medium and therefore the overall Sensitivity is **Low**.

A7.108 The characteristics of the O Industrial/Business Parks are typically large scale, of variable quality, busy traffic and large car parks with some landscape corridors. Some large scale developments dominate the horizon to the north and west of the Revised Development site.

A7.109 The U Urban Character Area is characterised by linear settlements which tend to coalesce along the major road corridors e.g. Bradford Road. Local settlements e.g. Oakenshaw have a strong vernacular characterised by stone terraces and cottages, local features e.g. the spire of the Church of St Andrew, interspersed with more modern detached properties.

A7.110 The following table summarises the Landscape Character Units, their quality, sensitivity and susceptibility to change:

Table A7.11: Landscape Character Units Sensitivity

Character Area Units	Approx. distance from site	Quality	Value	Susceptibility to change	Sensitivity
E8 Rural Fringe	0.8km	Ordinary	Low	Medium	Low/Medium
G11 Wooded Rural Valley	0km	Good	Moderate	Medium	Medium
G13 Wooded Rural Valley	3.5km	Attractive	Moderate	Medium	Medium
K1 Coalfield Edge Urban Fringe Farmland	0.3km	Good	Low	Medium	Low
O Industrial/ Business Parks	1km	Poor	Low	Medium	Negligible
U Urban	0.75km	Ordinary	Moderate/ Low	Low	Negligible

Landscape and other relevant Designations

A7.111 Landscape and other designations are shown in Figure A7.18: Landscape Designations (**AddendumTechnical Appendix A7.0)**

Registered Parks and Gardens

A7.112 There is one Registered Park and Garden within the 5km study area, **Bowling Park**, approximately 4km north of the Revised Development.

Country Parks

A7.113 **Oakwell Hall Country Park** lies some 2km east of the Revised Development.

Ancient Woodland

A7.114 There are nine areas of Ancient Woodland within the study area including: Odsal Wood, Kit Wood, Park/Shackleton Wood, Chatts Wood, Hanging Wood, Great and Little Hunsworth Woods, Fusden Wood, Old Hanna/Low Woods, Gannerthorpe Woods.

Other Designations

A7.115 The study area includes a total of six **Conservation areas** (refer to Figure A7.1.18 Landscape Designations).

- Birstall
- East Bierley
- Gomersal
- Hartshead Moor Top
- Little Gomersal
- Scholes

A7.116 There is one **Scheduled Monument** within 5km of the Revised Development south of Cleckheaton. This is the Anglian high cross fragment known as Walton Cross.

A7.117 There are 4 Grade 1, 19 Grade 2* and 233 Grade 2 **Listed Buildings** within 5km of the Revised Development.

A7.118 There are 3 **Local Nature Reserves** within the 5km study area include:

- Railway Terrace
- Tong Moor
- Oakwell Park

Baseline Visual Receptors

A7.119 Visual receptors are viewpoints from which people may obtain a view to the development. Factors which increase the potential numbers of receptors to the Revised Development would be:

- The size, in terms of height and mass of the building footprint. The parameters plan indicates typical industrial built form. The plan represents the scale of the development within the context of the surrounding landscape. The number and form of the buildings may increase or decrease their visibility to receptors;
- The Revised Development is situated between two major roads that are busy commuter corridors, with traffic travelling at high speed.

A7.120 Potential visual receptors include:

- Recreational users such as walkers, cyclists and horse riders;
- Road-users;
- Residential properties;
- Commercial properties;

- People who work in the area;
- Users of Cleckheaton & District Golf Course.

A7.121 Figure A7.19 (**Addendum Technical Appendix A7.0**) illustrate the Key access and transport connections: the road network, national trails, cycle network and footpaths.

A7.122 The ZTV indicates that the Revised Development may be visible along the M606 corridor to the north west, further west of the M606 into the outer urban area of Bradford, south west of the site towards Scholes and from the Golf Course, north east of the across the farmland the East Bierley and south east of the Revised Development, along the A638 around Cleckheaton and Gomersal.

A7.123 Following the ZTV, a Zone of Visual Influence was modelled after inputting the heights of buildings and blocks of woodland within a 2km radius of the site. This indicates reduced visibility of the Revised Development to the south east, leaving potential views from the Brontë Way between Cleckheaton and Gomersal and areas within the business park to the south east of the M62. Other areas highlighted in the ZVI include the land between the A58 and Scholes, the Golf Course and area between the M606 and Wyke, a few areas of farmland north and north east of the Revised Development towards Bierley and East Bierley and parts around Odsal, north west of the Revised Development. Site visits to evaluate the views from these areas were completed.

Recreational Walking/Cycling Routes

A7.124 The following recreational routes lie within the study area, illustrated on Figure A7.19 (**AddendumTechnical Appendix A7.0**):

- Kirklees Way, a National Trail, passes just north of the site along Cliff Hollins Lane and through Chatts Wood to the north east of the site;
- Spen Valley Heritage Trail follows the path of the Kirklees Way from the west and north of the site before branching off south at Chatts Wood and then north from Hunsworth Lane at Upper Park House Farm;
- Brontë Way, a national trail, passes through the southern part of the study area from west to east;
- NCN 66, a National Cycle Route, enters the study area in the south east at Heckmondwike, travels north west through Cleckheaton and follows the dismantled railway across Cleckheaton Golf Course before circumnavigating Oakenshaw and passing under the M606 to travel north towards Bierley.

Public Right of Way (PRoW)

A7.125 The Revised Development site has a public footpath passing through the northern end of the site along the access road before heading into Hanging Wood east of the site. The study area has a network of footpaths and bridleways most of which a located in areas of farmland around East Bierley, Gomersal and Scholes. There is also a footpath running through Cleckheaton Golf Club

Roads and Networks

A7.126 The M62 passes the southern end of the site and the M606 runs along the western edge. The Motorway junction sits higher than the site with wooded embankments, preventing views form the south. However, the site can be seen from the slip road of the M606 and the bridge of the M62. A network of main roads extend from the motorway junction. Other minor roads include the local road to Oakenshaw from the M606/M62 junction and Cliff Hollins Lane to the north of the site.

A7.127 There is a dismantled railway that runs south east to north west through the study area that now forms part of the NCN 66 cycleway.

Important Vantage Points

A7.128 There are no important vantage points identified within the study area. However, the footpath climbing up to Hanging Wood provides good views and the higher ground associated with Cleckheaton and District Golf Club and Kirklees Way/Oakenshaw Lane provide wide views of the landscape of the area.

Assessment Viewpoints

(Refer to Figure A7.20 Photomontage Viewpoint Location Plan) (**Addendum Technical Appendix A7.0**)

A7.129 Site visits were carried out in April 2014 to determine views, in winter/spring conditions (i.e. before leaf out) to be included in the Landscape and Visual Impact Assessment (LVIA). The following table summarises views illustrated in the LVIA:

Table 7.12 Viewpoint Location and Selection Criteria

Ref.	Viewpoint Location	O.S. Grid Reference	Selection Criteria
VP1	Footpath at Cliff Hollins Farm	417875, 428057	To assess the potential impact on footpath users and properties located on the higher ground along Cliff Hollins Lane
VP2	M62 Slip road	418178, 426938	To assess the potential impact on road users
VP3	Junction of Cliff Hollins Lane and access road to the site	417682, 427842	To assess the potential impact on views from properties along Cliff Hollins Lane and along the field that forms part of the strategic green belt gap
VP4	Footpath to the north of Hanging Wood	418155, 427609	To assess views experienced by walkers using the footpath on higher ground to the north east of the Revised Development.

Standard and Primary Mitigation Measures

A7.130 Landscape and visual mitigation measures for the Revised Development were developed as an integral part of the design process associated with the project including consideration of unit numbers, size and locations. The design process associated with the Revised Development included consideration of environmental and technical constraints. The potential mitigation measures listed below could be secured by conditions on a consent. The landscape principles adopted as part of the design process for the Site include the following:

- Creation of a series of plateaux and development zones to enable the development and to use landform to accommodate and screen the proposed buildings from wider views;
- Breaking the site down into compartments, dictated by the potential development form and market requirements and which also reflect the historical field pattern associated with the site and remnant field patterns seen in the adjacent landscape. It is difficult to fully mitigate views from the higher ground to the north, therefore breaking up the site into compartments will assist in accommodation of the potential development within the local landscape setting. Mitigation measures therefore aim to re-establish, where possible, the structure of the landscape. Use of structure planting in the form of native woodland to further screen views from the local highways and residential properties on higher ground;
- Hunsworth Beck is a feature of the site (of possible amenity value for site users), of nature conservation interest in addition to forming a major drainage element. The Revised Development would adopt a SUDS approach utilising swales, balancing ponds, wetland and damp meadow. Further habitat creation in association with the existing wetland features is proposed in association with the low lying land adjacent to Hunsworth Beck;

Potential Significant Effects

A7.131 A description of the main effects of the Revised Development is described followed by a comment on the significance of the effect. All of the effects are direct as these result directly from the development itself with the proposed primary and standard mitigation measures at Year 1.

Existing Landscape Fabric

Construction Phase

A7.132 During construction there would be clearance of existing vegetation within the site. This is mostly scrub and grasses. There would also be clearance of the disused buildings and settling tanks and other structures associated with the former WwTW on the site. In landscape terms it is considered that the value of the landscape of the site is low. It is considered that there is a **Low** sensitivity to change.

A7.133 There would be temporary cabins and car parking within the compound. Use of cranes and other heavy plant including earth moving equipment would also be expected throughout construction.

A7.134 The magnitude of change on the existing landscape features during the construction phase would be **Substantial**, the landscape associated with the site is of **Low** sensitivity therefore the significance of the effect will be **Moderate Adverse**.

After Completion

A7.135 It is the intention for the Revised Development to be contained within a landscape setting which compliments the scale and pattern of the surrounding landscape. A substantial new landscape structure would be established as part of the new development, this would therefore increase the landscape value of the site. It is considered that the site is of **Low** sensitivity and the magnitude of change is **Substantial**, the potential effect on the landscape features within the site would therefore considered to be **Moderate Beneficial.**

Landscape Character

A7.136 Using the classification criteria set out in **Table A7.6** the landscape character sensitivity and magnitude of the study area is summarised in **Table A7.12** below. Significant thresholds can be determined from different combinations of sensitivity and magnitude e.g. major effects are a combination of substantial sensitivity and substantial magnitude; moderate effects can result from medium sensitivity and moderate magnitude or low sensitivity and substantial magnitude; and minor effects can be a product of low sensitivity and slight magnitude.

Construction Phase

A7.137 It is recognised that there would be some additional temporary effects during construction over and above those assessed as permanent effects under the heading of After Completion below. The effects on landscape character would therefore increase incrementally as construction progresses and more building units are erected.

A7.138 During the construction period there would be earthworks associated with the establishment of levels, construction of building foundations, access routes and underground cable routes. These activities would result in soil disturbance and have an effect on landscape character arising from temporary stockpiling of soil, exposure of bare earth and movement of construction vehicles. The site compound will also consist of cabins, car parking and storage areas.

A7.139 Cranes would be used during the construction phase and would temporarily alter the existing skyline within this character area.

A7.140 The construction phase would result in a **Moderate** magnitude of change within a local landscape of **low** sensitivity. The effect of the site compound on the local landscape character would be **Moderate/Minor Adverse**.

Operational Phase

E8 Batley – Dewsbury Rural Fringes

A7.141 The Revised Development would not affect the landscape character of Dewsbury Rural Fringes due to distance, intervening topography, built form and vegetation. The sensitivity of this character area is considered to be **Low/Medium**, the magnitude of change is considered to be **Negligible**, and therefore the overall effect on Dewsbury Rural Fringes will be **Minor /None Adverse.**

G11 Batley Fringe Incised Valleys

A7.142 The Revised Development will alter the landscape character of the local G11 Batley Fringe Incised Valleys, one of the G11 character areas, within which the site sits. The sensitivity of this character area is considered to be **Medium**, the magnitude of change to the local character is considered to be **Moderate.** The key features of the proposed development are similar to that of the characteristics of large industrial sheds present within the local area. The effect would be localised due to the siting on the valley floor with limited effects on other adjacent landscape character areas. The overall effect on Batley Fringe Incised Valleys *(in the vicinity of the site*) would be **Moderate Adverse.** This is not considered a significant effect under the EIA Regulations.

G13 Clifton Beck

A7.143 The Revised Development would not affect the landscape character of Clifton Beck. The sensitivity of this character area is considered to be **Medium/High**, the magnitude of change is considered to be **Negligible**, and therefore the overall effect on Clifton Beck would be **Minor** adverse.

K: Coalfield Edge Urban Fringe Farmland

A7.144 The Revised Development would alter the landscape character of Coalfield Edge Urban Fringe Farmland. The sensitivity of this character area is considered to be **Low**, the magnitude of change is considered to be **Moderate**, and therefore the overall effect on Coalfield Edge Urban Fringe Farmland would be **Moderate/Minor** adverse**.**

O: Industrial/Business Parks

A7.145 The Revised Development would not affect the landscape character of *Industrial/Business Parks.* The sensitivity of this character area is considered to be **Negligible**, the magnitude of change is considered to be **Negligible**, and therefore the overall effect on *Industrial/Business Parks* would be **None.**

U: Urban

A7.146 The Revised Development would alter the landscape character of *Urban*.. The sensitivity of this character area is considered to be **Negligible**, the magnitude of change is considered to be **Slight**, and therefore the overall effect on *Urban* would be **Minor/None** adverse.

Table A7.13 Summary of effects on Landscape Character

Landscape Units	Approx. Distance From Site (closest)	Sensitivity	Magnitude	Significance
E8	0.8km	Low/Medium	Negligible	Minor/None
G11	0km	Medium	Moderate	Moderate
G13	3.5km	Medium/High	Negligible	Minor
K1	0.3km	Low	Moderate	Moderate/Minor
O	1km	Negligible	Negligible	None
U	0.75km	Negligible	Slight	Minor/None

Landscape and other relevant Designations

Registered Parks and Gardens

A7.147 The ZTV (refer to Figures A7.10 Zone of Theoretical Visibility – Combined Development) indicates that the Revised Development would have no effect on **Bowling Park**, a Registered Park or Garden some 4km to the north.

Country Parks

A7.148 Oakwell Hall **Country Park** lies some 2km east of the Revised Development. The ZTV indicates that the Revised Development would not be seen from the Country Park.

Ancient Woodland

A7.149 There are nine areas of **Ancient Woodland** within the study area. Of these only the following have been identified (utilising the ZTV, refer to Figure A7.10 Zone of Theoretical Visibility) as being potentially impacted upon by the Revised Development:

A7.150 *Odsal Wood* – This wood is located approximately 2km north west of the Revised Development. The sensitivity of the designation is **Medium** and the magnitude of change is **Negligible,** therefore the effect would be **Minor** adverse. However, there is no direct effect on the designated area and given the distance the Revised Development is unlikely to have an effect on the context and setting of the designation.

A7.151 *Chatts Wood* – This wood is located approximately 0.5km north east of the Revised Development. The sensitivity of the designation is **Medium** and the magnitude of change is **Negligible**, therefore the effect will be **None** adverse. There is no direct effect on the designated area but the Revised Development may have a minor effect on the context and setting of the designation.

A7.152 *Great and Little Hunsworth Wood* – This wood is located approximately 0.75km south west of the Revised Development. The ZVI indicates that the Revised Development is not likely to be visible from this designation or have an effect on the setting of the woodlands.

A7.153 *Hanging Wood* – This wood is located adjacent to the Revised Development along Hunsworth Beck to the east. The Revised Development is visible from the edges of this block of ancient woodland. The sensitivity of the designation is **High** and the magnitude of change will be **Slight to Negligible** provided that the woodland is well protected during construction in accordance with BS 5837 Trees in Relation to Design, Demolition and Construction. Therefore the effect would be **Minor to Minor/None** adverse. However long term mitigation may have a beneficial effect due to increasing tree cover associated with the new landscape masterplan and improvement of the wildlife corridor.

Other Designations

A7.154 In relation to the Conservation Areas, Scheduled Ancient Monuments and Listed Buildings within the study area, it is considered that nil significant effects are incurred due to distance or intervening topography, built form and vegetation.

A7.155 In relation to Local Wildlife Reserves the potential effects are nil due to distance and presence of intervening builtform, vegetation and topography.

Visual Amenity

A7.156 **Table A7.14** provides a summary of the effects at each of the viewpoints. The parameters plan Figure A7.2 illustrates the potential for landscape mitigation for screening and habitat enhancement. The photomontage illustrate the '*worst case scenario'*, at Year 1, without any landscape mitigation and at Year 10, with growth of the structure planting on the site perimeter. We are at this stage unclear as to the proposed structures that may occur within the new highway corridor nor the extent of planting within the corridor. The impact of any new highway infrastructure is not considered within this assessment.

Table A7.14 Summary of Potential Visual Effects at Year 1

Ref	Viewpoint Location	O.S. Grid Ref.	Distance to Revised Development (nearest building)	Sensitivity of View	% of horizontal View Occupied by Revised Development	Magnitude of Change	Significance of Effect
VP 1	Footpath at Cliff Hollins Farm	417875, 428057	307m	Medium	32%	Moderate	Moderate Neutral
VP 2	M62 Slip road	418178, 426938	179m	Low	27.5%	Moderate	Moderate/Minor Adverse
VP 3	Junction of Cliff Hollins Lane and access road to the site	417682, 427842	42m	Medium	46.5%	Moderate	Moderate Adverse
VP 4	Footpath to the north of Hanging Wood	418155 427609	154m	Medium	47.8%	Moderate	Moderate Neutral

*V*iewpoint 1 – Footpath by Cliff Hollins Farm

A7.157 Refer to Figure A20 Photomontage Viewpoint Location Plan & Photomontage Viewpoint 1. (**Addendum Technical Appendix A7.0**) The viewpoint is located on the footpath south of Cliff Hollins Farm on Cliff Hollins Lane. The viewpoint is situated on elevated land at the beginning of the footpath before it heads east towards Chatts Wood and it sits approximately 18m above the level of the Site which lies 310m to the south. The viewpoint represents views experienced by users of the footpath and residents on Cliff Hollins Lane.

Existing View

A7.158 The view is a view of an urban fringe landscape, with pastoral fields in the foreground and on the upper slopes of the valley, interspersed by utility and highway infrastructure. Hedgerow trees and hedgerows are present as field boundaries. Woodland copse and clumps of trees occur on steeper slopes and on the horizon of the view. The edge of Chatts Wood can be seen behind the hill to the left. Pylons are present on the skyline across the full horizontal angle of view. In the far distance dense setting of woodland and urban settlement is seen. The sound of passing traffic from the nearby motorways is present. The derelict WwTW is visible in the middle distance.

Predicted View at Year 1 and Year 10

A7.159 The predicted view is illustrated by on Figure A7.38 Photomontage Viewpoint 1 and shows that the potential development zone would be visible within the middle distance of the view on the valley floor, backdropped by the topography and vegetation beyond. There will be partial screening by existing vegetation. The potential development would occupy up to 32% of the view. The view in the middle distance would alter from disused water treatment works to new industrial units. The Revised Development would be backdropped by the landform and vegetation beyond with partial screening in the fore and middle distance, Due to the extent of change within the view from this location, the likely magnitude of change is considered to be **Moderate.**

A7.160 A7.151 At Year 10, with tree growth, the magnitude of change is considered to remain **Moderate** due to the scale and mass of the Revised Development. Over an extended period the potential effect would reduce further as the structure planting continues to develop.

Effect on Landscape Character at Viewpoint 1

A7.161 A7.152 The viewpoint is located within one of the areas defined as G11 *Batley Fringe Incised Valleys* landscape character area. The sensitivity of this landscape is considered to be **Medium**. The magnitude of likely change would be **Moderate**, therefore the overall effect on the landscape character would be **Moderate Adverse.** There are beneficial effects due to the removal of the disused infrastructure and introduction of wildlife habitat, however it is considered that this is outweighed by the scale of the proposed development.

Effects on Visual Amenity

A7.162 This viewpoint is located on a footpath leading to Chatts Wood, a designated ancient woodland. The sensitivity of this view is considered to be **Medium.** The magnitude of likely change is considered to be **Moderate** therefore the overall effect on the visual amenity is likely to be **Moderate Neutral** at Year 1 and 10. The effects are considered to be adverse due to the introduction of large scale built form into a wide expanse of the view and beneficial due to the removal of derelict buildings and structures of the WWTW and introduction of new structure planting and other habitat creation with potential new pedestrian links to within the

locality. When the adverse effects are considered against the beneficial effects, it is considered the overall effect would be neutral.

Viewpoint 2 – M62 Slip Road

A7.163 Refer to Figure A7.20: Photomontage Viewpoint Location Plan & A7.39 Photomontage Viewpoint 2. (**Addendum Technical Appendix A7.0)**This viewpoint is located at Junction 26 of the M62 motorway on the slip road from the M606. Situated at the southern end of the site close to the site boundary this viewpoint represents vehicle users using the existing slip road onto the M62. Vehicle users would view into the site at an oblique angle, while travelling at speed.

Existing View

A7.164 In the middle distance, the disused Wastewater Treatment Works are partially visible. Due to the topography of the site, the existing filter beds and other low lying infrastructure are largely hidden. The view is principally of open pasture flanked by Hanging Wood to the right and slip road to the left. The towers of the existing overhead transmission lines are prominent features on the horizon. Other prominent vertical features include towers of the overhead transmission line traversing the valley on the horizon, the church spire of the Church of St Andrew and the light columns from the motorway. The settlement of Oakenshaw is visible in the far distance with the buildings of the WwTW and the large warehouse-like buildings of the Euroways Trading Park. The noise of the motorway is constant and loud.

Predicted View at Year 1 and Year 10

A7.165 The predicted view is illustrated on the A7.40 Photomontage Viewpoint 2. The image shows the southern part of the Revised Development present in the middle distance. The % of angle of horizontal view, 28% would be altered from farmland to industrial use with ancillary infrastructure. The development would be backdropped by landform with long distance views of large industrial sheds partially screened by vegetation. Due to the type of receptors being mainly highway users travelling at speed, with their focus on close-up views rather than long distance views and also the extent of change within the view from this location, the likely magnitude of change is considered to be **Moderate Adverse.**

A7.166 At Year 10, the impact of the predicted view would be lessened by the growth of the perimeter structure planting which would assist in mitigation of the views of the industrial development. The potential effects on visual amenity would further lessen with time as the planting became further established, leading to a reduced magnitude to **Slight Adverse.**

Effects on Landscape Character

A7.167 The viewpoint is located within G11 *Batley Fringe Incised Valleys* landscape character area. The sensitivity of this landscape type is considered to be **Low**. The magnitude of likely change on the existing landscape character would be **Moderate**, therefore the overall effect on the landscape is likely to be **Moderate/Minor Neutral.**

Effects on Visual Amenity

A7.168 This viewpoint is located at Junction 26 of the M62 motorway on the slip road from the M606. The sensitivity of the receptors are considered to be **Low**. The magnitude of likely change would be **Moderate,** therefore the overall effect on visual amenity at this location is likely to be **Moderate/ Minor Adverse** at Year 1 with the effects further lessened over time, with plant growth and potentially the works to the Junction 26, leading to **Minor Adverse** effect.

*V*iewpoint 3 – Junction of Cliff Hollins Lane and access road to the site

A7.169 Refer to Figure A7.20: Photomontage Viewpoint Location Plan & A7.43 Photomontage Viewpoint 3. This viewpoint is located on the access road used previously to the WwTW, from Cliff Hollins Lane. The view is looking south along the river valley.

Existing View

A7.170 The foreground of the view is associated with the dilapidated access road to the disused WwTW. The road is flanked by fenced pastoral fields on both sides. The field to the west of the access road rises gradually onto the horizon, screening views to the west. The field to the south rises up the valley side with scattered groups of trees. The towers of the electricity transmission lines are dominant features on the horizon above Hanging Wood. The sound of the nearby motorways is present. Visual detractors are the site entrance signage, electricity transmission lines, PROW signage and height limiters for the existing construction site, which dominate the entrance area.

Predicted View at Year 1 and Year 15

A7.171 The predicted view illustrates the commercial units within the economic development zone would be visible in the middle distance, on the skyline. The lower parts of the majority of the commercial units and would be screened by the intervening topography and existing vegetation. The perimeter of the commercial zones would be partially screened by the proposed planting and landscape associated with the development. The commercial development would occupy 47% of the horizontal angle of view depending on the form of the development. The likely magnitude of change is considered to be **Moderate.**

Effects on Landscape Character

A7.172 The viewpoint is located within the G11 *Batley Fringe Incised Valleys* landscape character area. The sensitivity of this landscape considered to be **Medium**. The likely magnitude of change would be **Moderate**, therefore it is likely that the overall effect on the local landscape would be **Moderate Adverse** due to the scale of the development and the change in landuse.

Effects on Visual Amenity

A7.173 This viewpoint is located on the access road to the site which is also a public footpath leading to Hanging Wood, a designated ancient woodland. The sensitivity of this view at this location is considered to be **Medium.** The likely magnitude of change would be **Moderate,** therefore the overall effect on the visual amenity is likely to be **Moderate Neutral**. The effects are considered to be adverse due to the introduction of large scale built form into a wide expanse of the view and beneficial due to the removal of derelict buildings and structures of the WWTW and the potential to add in enhancement of wildlife habitat. The effects would lessen over time as the planting became established assisting in reducing the massing of the large scale industrial development.

Viewpoint 4 – Footpath to the north of Hanging Wood

A7.174 Refer to A7.20: Photomontage Viewpoint Location Plan & A7.44 Photomontage Viewpoint 4. (**Addendum Technical Appendix A7.0**) This viewpoint is located on the public footpath which climbs the hillside to the north of Hanging Wood and to the north east of the Revised Development. The footpath is used infrequently by local residents for informal recreation and dog walking.

Existing View

A7.175 The disused water treatment works are evident in the middle distance of the view, on the valley floor. The disused works contains concrete retaining structures, rectangular and circular settling tanks and disused buildings. Beyond the WwTW, the green pasture rises towards the partially treed corridor of the M606 with Bradford Road beyond. The road corridor is distinct by the constant hum. The spire of the Church of St Andrew is prominent on the horizon as are electricity pylons which are present on the horizon of the hills above Oakenshaw. Large scale industrial buildings are also prominent in the far distance to the north. The landscape is a mixture of rural landscape, suburban/urban form and industrial/business development set amongst gently undulating hillsides.

Predicted View at Year 1 and Year 10

A7.176 The predicted view is illustrated by A7.44 Photomontage Viewpoint 7.4 and illustrates potential prominent views of the commercial development in the middle distance in the valley floor. Commercial development would be prominent in the view in the middle distance by the scale and height and would partially screen further development in the site. The development would occupy up to 48% of the horizontal angle of the view, the nearest proposed commercial building would be approximately 125m from the viewpoint. The magnitude of change is likely to be **Moderate.** There are open uninterrupted views from this elevated location of the development backdropped by topography and vegetation with similar large industrial sheds within the same angle of view. At Year 10, the visual effects would be lessened as planting mitigation alongside the watercourse and on the site periphery becomes further established, the full extent of which is not yet known.

Effects on Landscape Character

A7.177 The viewpoint is located within a G11 *Batley Fringe Incised Valleys* landscape character area. The sensitivity of this landscape considered to be **Medium**. The magnitude of change is likely to be **Moderate**, therefore the overall effect on the landscape would be **Moderate Adverse**.

Effects on Visual Amenity

A7.178 This viewpoint is located on a footpath adjacent to Hanging Wood, a designated ancient woodland, used infrequently by local residents. The sensitivity of this view is considered to be **Medium** (walkers using local networks of footpaths and tracks). The magnitude of change is considered to be **Moderate**, therefore the overall effect on the visual amenity would be **Moderate Neutral**. The effects are considered to be adverse due to the introduction of large scale built form within the expanse of the view, and beneficial due to the removal of derelict buildings and structures of the WwTW and introduction of habitat and screen planting to soften the appearance of the new large scale structures.

Effects on Receptor Groups

A7.179 From analysis of the 4 assessment viewpoints, ZTV and ZVI plans and field observations the significance of visual effects on different receptor groups (people) has been assessed. Each group of receptors is described in a clockwise direction starting in the north.

Effects on Residential Receptors

A7.180 Refer to Figure A7.21: Location of Properties Assessed in LVIA. (**Addendum Technical Appendix A7.0**) The ZVI combined with site visits indicates that the following towns and settlements, working in a clockwise direction from north are not affected by the Revised Development:

- Bowling
- Most of the properties in Bierley, with the exception of some located at the very southern end of the town.
- Dudley Hill
- Holme Wood
- East Bierley
- Westgate Hill
- Birkenshaw
- Swincliffe
- Hunsworth
- Birstall
- Gomersal
- Birstall Smithies
- Heckmondwike
- Liversedge
- Cleckheaton
- Brighouse
- Hartshead Moor Top
- Wyke & Lower Wyke
- Norwood Green
- Low Moor
- Buttershaw
- Wibsey
- West Bowling

A7.181 The ZVI combined with field work indicates that some of the properties within the following towns and settlements would experience some level of visual impact:

A7.182 *Properties at the southern end of Bierley* – approximately 1.6km to the north of the Revised Development, the ZVI indicates that some properties on the elevated land at the northern end of Greenfield Lane and Spen View Lane may have views of the Revised Development. These

properties include the farm at Mill Carr Hill, Lockwood Farm and some houses on Fieldhurst Court and Meadowcroft Rise. Views are likely to be oblique and vegetation and buildings will screen most of the Revised Development. The sensitivity of the views from these properties is considered **Low** and the magnitude of change is **Negligible**, the Revised Development would be likely to have a **Minor/None Adverse** effect.

A7.183 *Spen* – approximately 2.7km to the south east of the Revised Development, the ZVI indicates that some properties on Gomersal Lane in Spen may experience views of the Revised Development from 1st floor windows. A site visit to this area indicates that views will be oblique and screened by woodland in most cases. The sensitivity of the views from these properties is considered **Low** and the magnitude of change is **Negligible**, the Revised Development would be likely to have a **Minor/None Adverse** effect.

A7.184 A7.175 *Scholes* – Scholes is situated approximately 1.5km south west of the site. The ZVI indicates that some properties situated on the northern side of Whitechapel Road and Westfield Lane may have views of the Revised Development. Plate 7.11 shows the view from Scholes Cemetery on Whitechapel Road. The Revised Development would be visible, partially screened by woodland and planting. The sensitivity of the views from these properties is considered **Medium** and the likely magnitude of change is **Slight**, the Revised Development may therefore have a **Moderate/Minor Adverse** effect.

A7.185 *Okenshaw* – One of the closest settlements to the site, situated on the western side of the M606 approximately 0.5km from the Revised Development, the ZVI indicates that parts of Oakenshaw may have views of the Revised Development. Site visits have shown that the motorway and the associated vegetation screening would restrict most views. The sensitivity of receptors in Oakenshaw is considered to be **Low** and the magnitude of change is likely to be **Slight**, the Revised Development is therefore likely to have a **Minor Adverse** effect.

A7.186 *Odsal* – Located approximately 2km to the north west of the Revised Development, the ZVI indicates that properties on Greenville Drive, adjacent to Bradford Gold Course, may have oblique views of the Revised Development. Given that the views will be from gardens and rear windows that face north east onto the Golf Course and views south east towards the Revised Development are likely to be screened by woodland, industrial buildings and the M606, it is unlikely that there would be views from these properties. The sensitivity of receptors in Oakenshaw is considered to be **Low** and the likely magnitude of change **Negligible**, the Revised Development is therefore considered to have a **Minor/None Adverse** effect.

A7.187 *Properties around Euroways Trading Estate* – Properties located east of Euroways Trading Estate on Greenfield Lane may experience views of the Revised Development. These properties include Hag Hall Farm, Hills Side Cottage and Cheesecake Farm. Cheesecake Farm is assessed separately below. The sensitivity of these receptors is considered **Low** and it is likely that the magnitude of change will be **Moderate**, the Revised Development may therefore have a **Moderate/Minor Adverse** effect.

A7.188 Lower Woodlands is the closest settlement to the Revised Development situated at the northern end of the site and populating the area between and around Cliff Hollins Lane and Mill Carr Hill Road. A number of Properties in the this area have been assessed below including the six bungalows on Cliff Hollins Lane, the property at Grid Reference 417665, 427954 opposite Oak Mills, the two properties at Grid Reference 417862,428084, the two

properties at Grid Reference 417755, 428114, Cliff Hollins Farm, Chatts Farm, Clifford House Farm, Lower Chats Farm and Upper Chatts Farm. Other properties within this settlement are on elevated land and those on the southern edge of the village are more likely to experience views of the Revised Development. The properties on Mill Carr Road will also experience views of the proposed car park for Woodlands Primary School (refer to Fig. A7.9). Therefore it is likely that these properties on the southern edge of the village would have **Medium** sensitivity, the likely magnitude of change could be **Moderate,** therefore the likely overall effect on these properties will be **Moderate Adverse**. Properties behind these have **Low** sensitivity, the magnitude of change is considered to be **Slight** and therefore the overall effect on these properties would be **Minor Adverse.**

Assessment of Individual properties over 1km from the Revised Development

Cheesecake Farm, Mill Carr Hill Road

A7.189 Refer to Plate 7.34. The farm is approximately 1.0km north of the Revised Development on Mill Carr Hill Road. Due to the elevated position of the farm, there would be potential views of the Revised Development to the south. Recent new barns would screen views from the property towards the south. The sensitivity of this view is considered **Low** and the magnitude of change is likely to be **Slight** to **Moderate**, the Revised Development may therefore have a **Minor** to **Moderate/Minor Adverse** effect depending on the form of the development.

Upper Chatts Farm, Cliff Hollins Lane

A7.190 This property is located in an elevated position up Cliff Hollins Lane approximately 1.1km north east from the centre of the Revised Development. The farm is located on the north western side of Cliff Hollins Lane. The view towards the Revised Development is screened by roadside vegetation, trees, part of Chatts Wood and the topography. The sensitivity of this property is considered to be **Medium** and the magnitude of change is likely to be **Negligible**, any Revised Development would therefore have a **Minor Adverse** effect.

Copley House Farm

A7.191 Refer to Plate 7.33. This farm is approximately 1.1km north east of the Revised Development. The property sits on the brow of a hill and has principal views towards the development from the patio/veranda, at the side of the property. Much of the view is blocked by local topography, however, the northern part of the Revised Development, potentially may be seen. The sensitivity of this property is considered M**edium** and the magnitude of change is likely to be **Moderate**, the Revised Development could therefore have a **Moderate Adverse** effect.

Chatts Farm

A7.192 This farm is approximately 0.8km north east of the Revised Development on elevated land. The Revised Development will be screened partially by landform and Chatts Wood. The sensitivity of this view is considered **Medium** and the magnitude of change is likely to be **Moderate**, the Revised Development could therefore have a **Moderate Adverse** effect.

Assessment of Individual properties less than 1km from the Revised Development

Clifford House Farm

A7.193 This farm is located approximately 0.6km north east of the Revised Development on elevated land. The Revised Development would be screened partially by landform and existing and proposed planting. The sensitivity of this view is considered **Medium** and the magnitude of change likely to be **Moderate,** the Revised Development could therefore have a **Moderate Adverse** effect.

Lower Chatts Farm

A7.194 This farm is approximately 0.4km from the Revised Development. The property is on the north side of Cliff Hollins Lane and views are partially screened by properties and roadside vegetation. The sensitivity of this view is considered to be **Low** and the magnitude of change is likely to be **Moderate**, the Revised Development may therefore have a **Moderate/Minor Adverse** effect.

Two Properties at Grid Reference 417755, 428114

A7.195 These properties are approximately 0.8km north of the Revised Development. They are located in an elevated position on the north side of Cliff Hollins Lane. Hedgerows and hedgerow trees will partially screen the development and it will be more visible in winter. The sensitivity of this view is considered to be **Medium**. The magnitude of change is likely to be **Moderate**, therefore the overall effect on the visual amenity may be **Moderate Adverse.**

Two properties at Grid Reference 417862,428084

A7.196 These properties are approximately 0.3km north of the Revised Development. They are represented by Viewpoint 1. Refer to Photomontage Viewpoint 1. The sensitivity of this view is considered to be **Medium**. The magnitude of change is likely to be **Moderate**, therefore the overall effect on the visual amenity would be **Moderate Adverse** depending on the form of the development.

Cliff Hollins Farm, Cliff Hollins Lane

A7.197 This property is located further up Cliff Hollins Lane approximately 0.45km north east of the Revised Development. The property occupies an elevated position with views of the Revised Development from the garden and rear windows. The sensitivity of this view is considered to be **Medium** and the magnitude of change likely to be **Moderate** the Revised Development would therefore have a **Moderate Adverse** effect.

Property at Grid Reference 417665, 427954 opposite Oak Mills on Cliff Hollins Lane

A7.198 This property lies approximately 0.2km to the north of the Revised Development. Views from the ground floor and the garden are likely to be screened by the existing planting and Oak Mills across Cliff Hollins Lane. There may be views from the first floor. Planting of extra trees will help to screen views towards the development. The sensitivity of this property is considered to be **Medium** and the likely magnitude of change **Moderate**, the Revised Development may therefore considered have a **Moderate Adverse** effect.

Bungalows on Cliff Hollins Lane

A7.199 These are the closest properties to the Revised Development with the northern boundary of the Revised Development running along the rear garden fence line. The views towards the

Revised Development will be from the rear windows and gardens. Views are oblique and partially screened by existing and proposed fences and planting. The Revised Development would be further screened by landform and the 'benching' of the buildings in the landform. Strategic tree planting would also screen views of the proposed buildings. The sensitivity of the view is considered to be **Medium**, the magnitude of change is likely to be **Moderate**, and therefore the overall effect on these properties would be **Moderate Adverse** depending on the form of the development and landscape mitigation measures.

Effect on Woodlands CofE Primary School

A7.200 Woodlands Church of England Primary School is located approximately 170m from the northern end of the site. The School is on Mill Carr Lane and faces east. The views are from the ground floor and playground and there is likely to be a view from one room on the 1st floor. The view towards the Revised Development will be partially screened by existing and proposed trees. Views from the playground are screened by vegetation, though there may be views in winter. The Revised Development may be further screened by landform and the 'benching' of the buildings in the landform. The sensitivity of the view is considered to be **Medium**, the magnitude of change would be **Moderate**, and therefore the overall effect on the school would be **Moderate Adverse.**

Effect on Long Distance Trails

A7.201 There are three long distance trails within the study area, Kirklees Way, Bronte Way and Calderdale Way. Of these only, Kirklees Way and Bronte Way would potentially have views of the Revised Development.

A7.202 *Kirklees Way,* a National Trail, runs from Hartshead Moor Top, through Scholes then west of the M606 alongside the Golf Course, through Okenshaw and then passes just north of the site along Cliff Hollins Lane and through Chatts Wood to the north east of the site towards Birkenshaw. The ZVI indicates that the Revised Development can be seen from the trail where it runs from Scholes to just past Copley House Farm. From fieldwork investigations it is unlikely that the Revised Development will be seen from the part of the path running west of the golf course, most of this path is lined with tall hedgerows with very few gaps. The Revised Development will be seen from the path where it runs from Cliff Hollins Lane to Copley House farm. In some areas this will be blocked by Chatts Wood and other mature trees. The views are limited to the northern end of the Revised Development at Copley House Farm. The sensitivity of this view is considered **Medium** and the magnitude of change may be **Moderate**, the Revised Development may have a **Moderate Adverse** effect.

A7.203 *Spen Valley Heritage Trail* follows the path of the Kirklees Way from the west and north of the site before branching off south at Chatts Wood and then north from Hunsworth Lane at Upper Park House Farm. The views to the Revised Development are the same as described above along the Kirklees Way. The sensitivity of this view is considered **Medium** and the magnitude of change is likely to be **Moderate**, therefore the Revised Development may therefore have a **Moderate adverse** effect.

A7.204 *Bronte Way* (refer to Plate 7.14), a National Trail, runs around the southern side of the site through Gomersal, Cleckheaton and Brighouse. At Spen, just south of Gomersal, there is a small section of the trail from which the development may be visible. Views are blocked in part by the motorway junction, woodland and local topography. There may be views of the northern end of the site. The sensitivity of this view is considered **Medium** and the magnitude

of change likely to be **Negligible**. The Revised Development is therefore considered to have a **Minor Adverse** effect.

A7.205 *NCN 66,* a National Cycle Route, enters the study area in the south east at Heckmondwike, travels north west through Cleckheaton and follows the dismantled railway across Cleckheaton Golf Course before circumnavigating Oakenshaw and passing under the M606 to travel north towards Bierley. The ZVI indicates there may be glimpsed views towards the Revised Development from the part of the cycleway that passes through Cleckheaton and District Golf Club. These views will be partially screened by planting within the Golf Course landscape and the M606 and associated structure planting. The sensitivity of this view is considered **Medium** and the magnitude of change is **Slight**, the Revised Development is likely to have a **Moderate/Minor Adverse** effect.

Effects on Public Rights of Way (PRoW)

A7.206 Working in a clockwise direction from the north, the ZVI and field work indicates there is no visual impact from the following

- PRoW within and north of Bierley;
- PRoW in and east of East Bierley;
- PRoW South east of the M62;
- PRoW south of Scholes;
- PRoW in and west of Wyke;
- PRoW in and west of Low Moor;
- PRoW west of A641.

The ZVI and field work indicates that the Revised Development will impact visually on some PRoWs as described below.

A7.207 *Footpath within the site* – This footpath passes through the northern end of the site along the access road before crossing the Hunsworth Beck at the north east corner of the existing site and ascending into the Hanging Wood, the ancient woodland east of the site. This is the closest footpath to the Revised Development. As one ascends the path towards Hanging Woodland, the woodland will help to partially screen the buildings. The sensitivity of this footpath is considered to be **Medium**, the magnitude of change is likely to be **Moderate**, therefore the overall effect on the footpaths may be **Moderate Adverse** depending on the form of the development.

A7.208 *Footpaths around Chatts Wood and Copley House Farm* (Refer to Plate 7.15) - There are a few small footpaths branching off from the Kirklees Way and are approximately 0.5km to the north east of the Revised Development. Field work has shown that views of the northern half of the site will be visible from some of these footpaths. The sensitivity of this footpath is considered to be **Medium**, the magnitude of change is likely to be **Moderate**, therefore the overall effect on the footpaths may be **Moderate Adverse**.

A7.209 *Footpath running through Cleckheaton Golf Club* – This footpath runs from Oakenshaw to the A58 through Cleckheaton Golf Club. Field work along this footpath has shown that the formal planting within the golf course, combined with the structure planting associated with the motorway prevents views of the Revised Development. In some areas there may be glimpsed views. The sensitivity of this footpath is considered to be **Medium,** the magnitude of change is likely to be **Slight**, therefore the overall effect on the footpaths may be **Moderate/Minor Adverse**.

A7.210 *Footpath at Odsal & South Bradford Golf Course* – This footpath, also an off road cycle track, runs from Odsal Top through South Bradford Golf Course. The views are mostly screened by vegetation and views of the Revised Development are unlikely. The sensitivity of this footpath is considered to be **Medium,** the magnitude of change is considered to be **Negligible**, therefore the overall effect on the footpaths is likely to be **Minor Adverse**.

Effects on Major Roads

A7.211 *M62* – This runs from the east of the study area, passing the southern boundary of the site and out of the study area to the south. The ZVI indicates that there is approximately 1km of road from which the development can be seen. Field work has shown that a lot of these views are blocked by structure planting and the M606 bridge overhead. Travelling south, the views of the Revised Development are oblique, travelling north the views will be more prominent through gaps in the structure planting. Given the speed at which users will be travelling, the sensitivity of this road is considered to be **Low,** the magnitude of change is considered to be **Slight**, therefore the overall effect on the M62 is likely to be **Minor Adverse**.

A7.212 *M606* – This major road runs from the M62 junction just south of the site north towards Bradford along the western boundary of the site. The ZVI indicates that there is approximately 2.2km of road from which the development can be seen. Field work has shown that the structure planting associated with the motorway will block views to the site for most of this stretch of road. The Revised Development will become visible on the slip road to the M62. This is covered by Viewpoint 2. The sensitivity of this road is considered to be **Low** given the speed at which users will be travelling**,** the magnitude of change is likely to be **Moderate**, therefore the overall effect on the M62 may be **Moderate/Minor Adverse.**

Mitigation Measures

A7.213 The standard and primary mitigation measures that were incorporated within the design process itself are described in the Baseline Conditions Section, Paragraphs A129. We list below further secondary mitigation measures that would be incorporated within the masterplan at a further detail design stage.

Secondary Mitigation Measures

A7.214 No significant effects are identified from the assessment. However there are opportunities to add further secondary mitigation measures to address potential adverse effects further.

- Use of 'green corridors', using hedgerow trees and native hedgerows to define the individual compartments for development. These green corridors would have a partial screening function, reflect the pattern of the surrounding landscape, act as wildlife corridors and be incorporating pedestrian cycle routes assist in circulation across the site;

- Use of street tree planting with shrub understorey adding greenery into a large scale industrial area, often dominated by large ancillary areas of car parking;
- Use of native tree and hedgerow species, typical of the locality including Oak, Birch, Willow, Poplar, Field Maple, Cherry, Hawthorn, Blackthorn, Elder etc.
- Use and management of naturalistic planting schemes associated with the lower, wetland parts of the site, including wildflower grasslands and meadows, to encourage wider biodiversity;
- The use of mounding and landform at the northern end of the Site to assist in further screening of views from properties at elevation, looking down onto the Site.
- The embankments associated with the proposed car park for Woodlands Primary School would provide an opportunity for native tree planting and understorey.

Residual Effect Assessment

A7.215 This is a second assessment and takes the initial conclusions of the Predicted Significant effects, applies the likely secondary measures of mitigation described above, the growth and establishment of the structure planting over a 10 year period and draws the final conclusions.

A7.216 In this LVIA, effects that are described as Major or Major/Moderate are considered to be significant effects as defined by the Environmental Impact Regulations 2017. It should be noted that significant effects need not be unacceptable or negative. The effects may be adverse, neutral or beneficial.

A7.217 The LVIA finds that due to the nature of the location of the site within part of the landscape character area *G11 Batley Fringe Incised Valleys*, which lies on the urban fringe of South Bradford, significant effects to the local landscape character would not be incurred. The area is characterised by steep sided valleys with rivers and woodland, with occasional field pattern of hedgerows and hedgerow trees. Presence of settlements on the valley floor within this character area are not uncommon. Views of settlement and industrial parks are visible within the proximity partially screened by built form and vegetation. The Site has a restricted ZVI due to the intervening topography vegetation and existing built form. Views to the wider neighbouring landscape character areas are restricted.

A7.218 In relation to the visual amenity, we find that significant effects would not be incurred due to the proposed development. The disused infrastructure of the waste water treatment works would be replaced by modern industrial units which would replace one type of industrial landscape by another. Industrial parks with large sheds are a feature of the area of South Bradford. There would be an opportunity to divide up the areas of industrial zone by replicating existing field pattern of hedgerow and incorporating areas of structure woodland on the site perimeter which would assist in screening views from outside the site. There are a limited number of local visual receptors from occasional nearby residential properties and isolated farmsteads, with occasional public rights of way used infrequently. Effects on visual amenity are not considered to be significant. Views of the development, often from elevated locations are backdropped by landform with other visual detractors such as transmission lines and highway infrastructure present.

A7.219 The following **Table A7.15** summarises the potential residual effects following mitigation of the structure planting at Year 10 and incorporation of secondary mitigation measures. The structure planting mitigation over this length of period would assist in screening the lower height of the development during this 10 year period with further screening effects mitigated over time. Additional tree planting is potentially likely to be present on the perimeter of the site and in association with the new road junction works however detail is not known at the time of the assessment.

Table A7.15 Summary of Likely Significant Residual Landscape and Visual Effects at Year 1 and 10

Construction / Operational	Location	Significance at Year 1	Significance after mitigation and 10 year growth of structure planting	Permanent/Temporary
EXISTING LANDSCAPE FEATURES				
Construction	The Site	Moderate	N/A	Temporary
Operational	The Site	Moderate Beneficial	Moderate Beneficial	Permanent
LANDSCAPE CHARACTER				
Construction: Year 1	Batley Fringe Incised valleys Landscape Character Area	Moderate Adverse	N/A	Temporary
Operational	Batley Fringe Incised valleys Landscape Character Area	Moderate Adverse	Moderate Adverse with effects reducing over time as planting becomes further established	Permanent
VISUAL AMENITY				
Construction	Viewpoint 1 : Cliff Hollins Farm	Moderate Adverse	N/A	Temporary
Operational	Viewpoint 1 : Cliff Hollins Farm	Moderate Neutral	Moderate Neutral with effects reducing over time as planting becomes further established	Permanent
Construction	Viewpoint 2: Properties at Grid Reference 417862 428084	Moderate/Minor Adverse	N/A	Temporary

Construction / Operational	Location	Significance at Year 1	Significance after mitigation and 10 year growth of structure planting	Permanent/Temporary
Operational	Viewpoint 2: Properties at Grid Reference 417862 428084	Moderate/Minor Adverse	Minor Adverse with effects reducing further over time as planting becomes established.	Permanent
Construction	Viewpoint 3: Bungalows on Cliff Hollins Lane	Moderate Neutral	N/A	Temporary
Operational	Viewpoint 3: Bungalows on Cliff Hollins Lane	Moderate Neutral	Moderate Neutral with effects reducing further over time as planting becomes established.	Permanent
Construction	Viewpoint 4: Footpath within site/along existing access road	Moderate Adverse	N/A	Temporary
Operational	Viewpoint 4: Footpath within site/along existing access road	Moderate Neutral	Moderate Neutral with effects reducing further over time as planting becomes established.	Permanent

Cumulative Effect Assessment

A7.220 Cumulative assessment considers the combined effects of the Revised Development with other known developments within the study area. In this case, the main development would be the future works to the M62 junction, adjacent to the Site. Highways England has placed a Holding Direction on the planning application preventing the local authority from granting planning permission on the land adjacent to the M62. This is due to uncertainty regarding the future development of the M606 and M62 road junction and the potential land requirement to undertake the works. The outline of the area required for these potential works is shown and described on Figure A7.2.

A7.221 It is assumed from the position of the current highway, the proposed junction works would be potentially elevated in the form of an embankment, with associated planting of tree belts. The development would have an effect on the existing landscape fabric and visual amenity. The full potential cumulative effect of the highway work in relation to the Revised Development cannot be assessed as part of this LVIA until the full extent of the works is known. However, the potential cumulative effects of the proposed redevelopment of former North Bierley WwTW, would be considered by any future application or proposal for the highway works.

References

A7.1 European Landscape Convention (2007);

A7.2 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017;

A7.3 National Planning Policy Framework (March 2012);

A7.4 Kirklees Unitary Development Plan Saved Policies (2007);

A7.5 Bradford Core Strategy (2017);

A7.6 Replacement Calderdale Unitary Development Plan (2009);

A7.7 Calderdale Local Plan nitial Draft (July 2017)

A7.8 Landscape Institute/Institute of Environmental Management and Assessment, Guidelines for Landscape and Visual Impact Assessment, Third Edition, (2013);

A7.9 Landscape Institute, Position Statement Green Infrastructure and Integrated Approach to Land Use, (2013);

A7.10 Landscape Institute Advice Note 01/2011 Photography and Photomontage in Landscape and Visual Impact Assessment, (2011);

A7.11 Natural England, An Approach to Landscape Character Assessment (2014);

A7.12 The Countryside Agency and Scottish Natural Heritage, Landscape Character Assessment; Guidance for England and Scotland, (2002);

A7.13 Countryside Commission English Nature, The Character of England: Landscape, Wildlife and Natural Features, (1996);

A7.14 Kirklees Council Landscape Architects, Former North Bierley Waste Water Treatment Works, Cliff Hollins lane, Cleckheaton Landscape Character Assessment, (2015);

A7.15 Land Use Consultants, *South Pennines Landscape Character Assessment*, report to Standing Conference of South Pennines Authorities (SCOSPA), (1999);

A7.16 City of Bradford Metropolitan District Council, Local Development Framework for Bradford Landscape Character Supplementary Planning Document, (2008);

A7.17 Kirklees Council Local Plan Submission Documents SD1, Strategies and Policies, (2016).

A8. Ground Conditions

Purpose of the Assessment

A8.1 The purpose of this addendum to the July 2016 ES is to assess the potentially likely significant environmental effects as a result of the amendments which have been made to the proposals (as described in Chapter A4). In addition, any relevant new/updated information or points of clarification which could be considered relevant to identifying the potential likely significant effects of the proposals are presented.

A8.2 In 2016, an ES (July 2016 ES, to be found at **Technical Addendum Appendix A1.0 and A1.1)** was prepared to support the redevelopment of the former North Bierley WWTW and adjacent land for mixed use purposes comprising B2/B8 employment and residential development. In addition, a related planning application for a new car park for a local school was submitted. This ES Addendum will consider the changes between the original scheme and the new scheme which now comprises a solely commercial development on a reduced development area along with the new car park.

A8.4 This Chapter is prepared by Wardell Armstrong

A8.4 The following comments are made with regard to the Ground Conditions chapter and will clarify whether the information contained within the original ES (July 2016 ES) remain valid or whether the changes to the development proposal would result in a change to the assessment.

Legislative Framework

National Policy and Legislation

A8.5 The relevant legislation, planning policy and guidance set out in paragraphs 8.3 – 8.10 remains valid.

Local Policy

Kirklees

A8.6 The relevant local policy Kirklees Council as set out in paragraphs 8.11 – 8.12 remains valid.

A8.7 However, the Kirklees Publication Draft Local Plan [Ref. A8.1] was published for consultation in December 2016 prior to being submitted to the Secretary of State for independent examination, due to start on 10 October 2017. The Development should also be considered in the context of this policy as follows:

Policy PLP 52

Protection and improvement of environmental quality

A8.8 Proposals which have the potential to increase pollution from noise, vibration, light, dust, odour, shadow flicker, chemicals and other forms of pollution or to increase pollution to soil or where environmentally sensitive development would be subject to significant levels of pollution, must be accompanied by evid*ence to show that the impacts have been evaluated and measures have been incorporated to prevent or reduce the pollution, so as to ensure it does not reduce the quality of life and well-being of people to an unacceptable level or have unacceptable impacts on the environment. Such developments which cannot incorporate suitable and sustainable mitigation measures which reduce pollution levels to an acceptable level to protect the quality of life and well-being of people or protect the environment will not be permitted.*

Where possible, all new development should improve the existing environment.

Policy PLP 53

Contaminated and unstable land

A8.9 Development on land that is unstable, currently contaminated or suspected of being contaminated due to its previous history or geology, or that will potentially become contaminated as a result of the development, will require the submission of an appropriate contamination assessment and/or land instability risk assessment.

A8.10 For developments identified as being at risk of instability, or where there is evidence of contamination, measures should be incorporated to remediate the land and/or incorporate other measures to ensure that the contamination/instability does not have the potential to cause harm to people or the environment. Such developments which cannot incorporate suitable and sustainable mitigation measures which protect the well-being of residents or protect the environment will not be permitted.

Bradford

A8.11 Paragraphs 8.13 – 8.22 of July 2016 ES are no longer valid following the adoption of the Core Strategy (Ref A8.8) by Bradford Metropolitan District Council on 18 July 2017. The Core Strategy now forms part of the Development Plan for the Bradford District and will be used in determining planning applications. The following paragraphs are now to be inserted after Paragraph 8.12 of July 2016 ES:

"Policy EN8: Environmental Protection

A8.12 In order to protect public health and the environment the Council will require that:

A8.13 Proposals which are likely to cause pollution or are likely to result in exposure to sources of pollution (including noise, odour and light pollution) or risks to safety, will only be permitted if measures can be implemented to minimise pollution and risk to a level that provides a high standard of protection for health, environmental quality and amenity. The following issues require particular attention:

B. Land

A8.14 Proposals for development of land which may be contaminated or unstable must incorporate appropriate investigation into the quality of the land. Where there is evidence of contamination or instability, remedial measures must be identified to ensure that the development will not pose a risk to human health, public safety and the environment. Investigation of land quality must be carried out in accordance with the principles of best practice.

A8.15 The focus on encouraging the re-cycling of brownfield land, the need to identify land suitable for accommodating future growth, combined with the District's history of industrial activity, mean that land contamination is frequently an important planning consideration within the District. This is often a significant issue where sites proposed for residential use were formerly occupied by manufacturing activities or other industrial processes. To successfully resolve issues relating to residual contamination, sites must be subject to appropriate investigation and assessment of potential risks associated with previous land uses to make them 'suitable for use'. Addressing land quality issues is an important consideration in seeking to attract investment into the District. In the majority of cases, where the Local Planning Authority works in partnership with developers from the outset, contamination issues relating to previous land uses can be successfully resolved".

Policy WM1: Waste Management

A8.16 A. The Council will work with its partners and neighbouring authorities to integrate strategies for waste management in Bradford and at the sub-regional and regional levels. All forms of waste will be managed in accordance with the principles of the waste management hierarchy.

- Prevention
- Preparing for re-use
- Recycling
- Other recovery
- Disposal

"Core Strategy Objective 13:

A8.17 To reduce the impact of climate change through mitigation and adaptation, particularly through reducing pollution, energy consumption, the risk of flooding, and promoting the use of renewable energy and securing the means to become locally self sufficient".

"Core Strategy Objective 16:

A8.18 Safeguard and enhance the District's natural and renewable energy resources, including water, agriculture, woodland and minerals, and promote the sustainable management of waste and recycling".

Assessment Methodology

A8.19 Paragraph 8.23 is deleted and replaced by:

'Available reports and published information have been reviewed with the aim of identifying the ground conditions within and surrounding the proposed commercial development. This data review has established the geological situation beneath the site, identified areas of potentially contaminated land and of potential land instability and made an assessment of the engineering properties of the soils and rocks. It also identified potential pollutant linkages, and facilitated a risk assessment for each of the identified pollutant linkages'.

A8.20 Paragraph 8.24 remains valid.

Methodology

A8.21 Paragraph 8.25 is deleted and replaced by:

'This assessment is based upon a review of current and historical data, site walk overs and site investigations. The development area has been considered following appropriate guidance for the proposed land use. The school parking area in the north west of the site has been considered as a commercial land use'.

A8.22 Paragraph 8.26 now includes a further appendix:

- Wardell Armstrong LLP. Updated Ground Conditions Risk Assessment, Reference JAS/JL/SH10534-LET-011, dated 10 October 2017 (**Addendum Technical Appendix A8.0**).

A8.23 July 2016 ES Technical Appendices 8.4 has now been superseded.

A8.24 The methodology for assessment as set out in Paragraph 8.27 remains valid.

Significance Criteria

A8.25 The significance criteria as set out in Paragraph 8.28 remains valid.

Study Area

A8.26 The study area is as set out in Chapter3 of the July 2016, **Figure 3.1**. Namely, it is unchanged from the red line area for the planning application.

Surveys

A8.27 Paragraph 8.30 – 8.33 referring to the surveys used to inform the chapter remain valid with any reference to residential development disregarded.

Consultation

A8.28 Paragraph 8.34 remains valid. However, consultation responses were also received following the submission of the application in 2016. The Environmental Health comments were that the contamination aspects of the application were acceptable.

Limitations of Site Investigation

A8.29 The limitations of the site investigation as set out in Paragraph 8.35 remain valid.

Baseline Conditions

A8.30 The baseline conditions as set out in Paragraphs 8.36 – 8.37 remain valid.

Site Investigation

A8.31 Paragraph 8.38 remains valid. However, due to the change in land use from mixed residential and commercial to solely commercial and the reduction in the developable area, the site has been reassessed to accurately reflect this new proposal. A letter report has been prepared and is appended at AA8.6 entitled "*Updated Ground Conditions Risk Assessment*" which summarises this new assessment.

Geology

A8.32 The description of the geological setting beneath the site as described in Paragraph 8.39 remains valid.

Hydrogeology

A8.33 The hydrogeological setting at the site as described in Paragraph 8.40 – 8.43 remains valid.

Hydrology

A8.34 The hydrological setting as described in Paragraph 8.44 remains valid.

Mining

A8.35 The mining setting at the site as described in Paragraphs 8.45 – 8.58 remain valid.

Phase II Intrusive Site Investigation

A8.36 The Phase II investigation as set out in Paragraphs 8.59 – 8.61 remain valid. However, reference should now be made to **Addendum Technical Appendix A8.0** as well as July 2016 ES Technical Appendix 8.2 and drawing SH10534-008c.

Scope

A8.37 The scope of the investigation as set out in Paragraphs 8.62 – 8.64 remain valid.

Contamination Assessment

A8.38 Paragraphs 8.65 – 8.77 are no longer valid due to the new Development Proposals (commercial only) and the reduced developable area. The Contamination Assessment has therefore been updated based on letter report JAS/JL/SH10534-LET-011 dated 10 October 2017. The site has been reassessed with regard to this information and the following paragraphs are now valid.

Human Health

Human Health – Future Occupiers

A8.39 Generic Assessment Criteria (GAC) values derived using the CLEA Model with an SOM of 2.5% have been selected in this GQRA assessment.

A8.40 The soil concentrations for heavy metals, Polycyclic Aromatic Hydrocarbons (PAHs), petroleum hydrocarbons (TPHCWG) were below their respective GAC for commercial land use.

A8.41 Thirteen soil samples were screened for asbestos and no asbestos fibres were detected. In addition, no visual evidence of asbestos was recorded during site investigation works. Therefore, asbestos in soil contamination is unlikely to pose a risk to future site occupiers.

A8.42 The proposed car park is considered to have a low sensitivity as it is greenfield and covered by hardstanding. No source-pathway-receptor linkages are identified for this area and it is not considered further within the risk assessment.

Human Health – Construction Workers

A8.43 Thirteen samples tested for asbestos in made ground across the site recorded non-detect at screening level. These areas are not likely to pose a significant risk to construction workers.

A8.44 However, as with groundworks on all sites where made ground is present, it would be prudent to employ good site practices such as wearing of PPE and hazard awareness etc. during the groundworks. In addition, in the event that asbestos is visually identified during the groundworks, all works within the vicinity should cease and further advice should be sought.

A8.45 If further testing demonstrates that asbestos is present the following additional precautions may be required:

- Use of personal protective equipment such as gloves and masks during excavations
- Dust suppression employed in the form of a water mist during excavations;
- Dust monitoring of generation and levels employed throughout the works; include visual checks and use of a portable, hand held nephelometer; and
- Any stockpiles of excavated material will need to be kept damp and placed in a designated area lined and securely covered with polythene sheets or similar.

Surface Water and Groundwater

A8.46 From a comparison of soil and groundwater concentrations recorded on site against environmental quality standards, the recorded concentrations of medium to long chain petroleum hydrocarbons in groundwater are elevated with respect to the UKDWS in

BH5 and BH6 which are located outside of the proposed development area to the south. No significantly elevated petroleum hydrocarbon concentrations were identified in soil and the concentrations of petroleum hydrocarbons in groundwater across the development area are generally below the LOD and/or UKDWS, therefore the risk to surface water and groundwater can be considered more towards low than moderate for the development area.

Preliminary Remediation Options

A8.47 The previous assessment was based on a residential and commercial land use and recommended further work with respect to elevated heavy metal concentrations in the formerly proposed residential area in the north west area. However, as this area is now proposed for commercial land use and the soil concentrations are below their respective commercial GAC, this work is no longer considered necessary.

Buildings and Property

A8.48 Results from sulphate (2:1 extract) for materials on site indicate that a worst case design sulphate class of DS-2 and Aggressive Chemical for Concrete (ACEC) class of AC-2 may be appropriate for the application site.

Ground Gas

A8.49 The monitoring wells within the development area are characterised by low concentrations of methane (max 1.6%) and moderate concentrations of carbon dioxide (max 3.7%). The calculation of the Gas Screening Value using the ground gas data from the monitoring wells at the site indicates a classification of Characteristic Situation 1. No special ground gas protection measures are required for the development area.

Ecology

A8.50 The phytotoxic metals were analysed against the ECO-SSL threshold values for risk to sensitive plants. The results displayed numerous samples to have elevated metals considered likely to hinder sensitive plant growth in planned areas of landscaping. This is based on an overly conservative assessment using generic criteria and plants have been observed growing on site. Therefore this is not considered to be a significant concern.

Coal Mining

A8.51 The coal mining assessment as set out in Paragraph 8.78 remains valid. However, reference is made to BH6 which now lies outside the newly proposed developable area. Should development be proposed in this area in the future, this area will require further investigation and stabilisation.

Revised Conceptual Model

A8.52 The revised conceptual model as set out in Paragraphs 8.79 – 8.85 is no longer valid. The paragraph should now read: In line with current Environment Agency guidance, source, pathway and receptor linkages have been considered for the Application Site

based on the findings of the intrusive site investigation works and associated geochemical testing. Based on the information available for the site, no plausible source-pathway-receptor linkage has been identified for the proposed commercial land use.

Geotechnical and Foundation Design

A8.53 Paragraphs 8.86 and 8.91 – 8.96 remain valid.

A8.54 Paragraphs 8.87 – 8.90 are no longer valid as residential development is no longer proposed at the site.

North Bierley Mining Remediation Strategy

A8.55 The Mining Remediation Strategy as set out in Paragraphs 8.97 – 8.100 remain valid.

A8.56 However, July 2016 ES Technical Appendix 8.2 (found in Paragraph 8.97 and incorrectly referred to as Technical Appendix 8.3) should now be read in conjunction with **Addendum Technical Appendix A8.0,** which assesses the new proposals for the development following the comments received through the consultation. The July 2016 ES Technical Appendix 8.4 has been superseded.

A8.57 Paragraph 8.101 should now read:

'*The drilling works carried out to date have indicated some evidence of broken or soft ground indicative of old workings between 11.3m and 16.7m below ground level in BH6. Mine workings are primarily anticipated beneath the south of the newly proposed development area'.*

Soils and Agricultural Land Desk Study, Wardell Armstrong, July 2015 (superseded by report dated October 2017)

A8.58 The Soils and Agricultural Desk Study as set out in Paragraphs 8.102 – 8.106 remain valid.

A8.59 Paragraph 8.107 is deleted and replaced by:

'The Proposed Development would result in permanent loss of approximately 12ha of non-BMV agricultural land. It would also result in disturbance to soil resources due to earthworks. There is a potential to retain the majority of soil resources at the Application Site and reuse them in the creation of greenspaces, as well as use of suitable subsoil as an engineering fill, if required. Should the soil resources be exported from the Application Site appropriate Environment Agency permits will be required as waste regulations would apply to surplus soil. It is recommended that Defra's 2009 Construction Code of Practice for the Sustainable Use of Soils on Construction Sites is followed to minimise disturbance to soil resources and ensure suitable land quality for non-agricultural uses within the Proposed Development.

Predicted Significant Effects

A8.60 The predicted significant effects as set out in Paragraph 8.108 remain valid.

Assessment of Construction Effects

A8.61 The assessment of construction effects as set out in Paragraph 8.109 remains valid. However, Potential Impact [3] in Table 8.8 should read: *Impact on construction workers as a result of excavations into potentially contaminated soils/groundwater*.

Assessment of Operational Effects

A8.62 The assessment of operational effects as set out in Paragraph 8.110 remains valid. However, Potential Impact [8] in Table 8.9 is no longer valid. The rest of Table 8.9 is valid.

Scope of Mitigation

A8.63 The scope of mitigation as set out in Paragraph 8.111 remains valid.

A8.64 No mitigation is identified with respect to ground contamination as no plausible source-pathway-receptor linkage has been identified for the proposed commercial land use. However, as with groundworks on all sites where made ground is present, it would be prudent to employ good site practices such as wearing of PPE and hazard awareness etc. during groundworks on site.

Construction Phase

A8.65 The construction phase mitigation as set out in Paragraphs 8.113 – 8.114 remain valid.

A8.66 Paragraph 8.115 is deleted and replaced by:

'There is a potential to retain the majority of soil resources at the Application Site and reuse them in creation of greenspaces, as well as use of suitable subsoil as an engineering fill, if required. Should the soil resources be exported from the Application Site, appropriate Environment Agency permits will be required as waste regulations would apply to surplus soil. It is recommended that Defra's 2009 Construction Code of Practice for the Sustainable Use of Soils on Construction Sites is followed to minimise disturbance to soil resources and ensure suitable land quality for non-agricultural uses within the Proposed Development'.

A8.67 Paragraphs 8.116 – 8.117 remain valid.

A8.68 Paragraph 8.18 should now read:

'The Phase II Assessment indicates that there are no elevated levels of contaminants at the site with respect to the proposed commercial use. However, the potential for pockets of unidentified contamination remains a possibility. The significance of any unmitigated effect is assessed as moderate adverse'.

A8.69 Paragraphs 8.19 – 8.122 remain valid.

Operational Phase

A8.70 The operational phase mitigation as set out in Paragraphs 8.123 – 8.131 remain valid.

A8.71 Paragraphs 8.132 – 8.134 are no longer valid as they relate to residential development which no longer forms the Proposed Development.

A8.72 The ground gas assessment classified the development area as Characteristic Situation 1 and no special ground gas protection measures are required for this area.

Residual Effect Assessment

A8.73 The residual effect assessment as set out in Paragraph 8.137 remains valid. Table 8.10 is now superseded by the following table:

Table A8.1 Summary of Residual Effects

Potential Impact	Impact Area	Phase	Significance of unmitigated impact	Mitigation Measures	Residual Significance	Period and Permanent/ temporary
Permanent loss of soils/natural strata through construction/ excavation.	Local	Construction	Minor adverse	Cut material from site used elsewhere on Application Site. EA permit to be obtained should soil resources need to be removed from site. Defra's 2009 Construction Code of Practice for the Sustainable Use of Soils on Construction sites to be followed.	Negligible	Long term Permanent
Introduction of additional contamination into soil/ groundwater during construction phase as a result of accidental spillages i.e. fuels,	Local	Construction	Minor adverse	All fuel, oil and chemicals should be contained within a bunded compound or in bunded, double skinned tanks. Spill control and clean up facilities will be provided and	Negligible	Short term Temporary

Potential Impact	Impact Area	Phase	Significance of unmitigated impact	Mitigation Measures	Residual Significance	Period and Permanent/ temporary
construction materials.				on-site vehicle maintenance will be prohibited.		
Impact on construction workers as a result of excavations into potentially contaminated soils/ groundwater	Local	Construction	Moderate adverse	All construction workers and visitors will adhere to relevant health and safety measures including the use of PPE.	Negligible	Short term Temporary
Impact on construction workers as a result of excavations into and treatment of unstable mining features i.e. shafts/bell pits.	Local	Construction	Major adverse	All mining features which are likely to be impacted by the proposed development will be investigated and treated to stabilise them. Construction works will be carried out to agreed methods statements and a watching brief will be maintained for unrecorded features.	Negligible	Short term Temporary
Introduction of contamination into soil/ groundwater as a result of accidental spillage/ leakage from	Local	Operation	Minor adverse	Fuel interceptors will be incorporated within the drainage design to remove any hazardous substances	Negligible	Short term Temporary

Potential Impact	Impact Area	Phase	Significance of unmitigated impact	Mitigation Measures	Residual Significance	Period and Permanent/ temporary
vehicles (site users and delivery vehicles).				which might be present. Interceptors will be subject to regular maintenance inspections.		
Degradation of building materials over time as a result of contact with sulphates within soils.	Local	Operation	Minor adverse	Selection of foundations and concrete should consider the results of the site investigation and be designed accordingly. Buried concrete structures will be designed taking into account the pH and sulphate concentration in the ground. Water supply pipes and buried pipes will be composed of a suitably resistant material.	Negligible	Short term Permanent
Impact on buildings/ development as a result of unstable ground (mining features, cut and fill groundworks).	Local	Operation	Major adverse	Made ground and areas where filling is required may require ground engineering to ensure a suitable founding medium. Mine	Negligible	Short term Permanent

Potential Impact	Impact Area	Phase	Significance of unmitigated impact	Mitigation Measures	Residual Significance	Period and Permanent/ temporary
				workings will require stabilisation beneath the Proposed Development.		

Cumulative Effect Assessment

A8.74 The cumulative effect assessment as set out in Paragraphs 8.138 – 8.140 remains valid.

Monitoring

A8.75 The suggested monitoring regime as set out in Paragraph 8.140 remains valid.

References

A8.1 Kirklees Publication Draft Local Plan (November 2016)

A8.2 Bradford Council Core Strategy (July 2017)

A9. Ecology

A9.1 This Chapter provides an addendum to the assessment of the likely significant impacts of the Proposed Development with respect to Ecology, as included within the July 2016 ES (see **Addendum Technical Appendix A1.0 and A1.1**).

A9.2 This Chapter has been prepared by Brooks Ecology Ltd

A9.3 The Chapter will consider the potential likely significant effects of the Proposed Development as set out in Chapter A4. In this Chapter comments are made with regard to each section of the Ecology Chapter of the July 2016 ES in order to clarify whether the information presented remains valid or whether the revised scheme would result in changes to the assessment

Legislation, Policy & Guidance

Legislative Framework

A9.4 The relevant legislation, planning policy and guidance set out in paragraphs 9.3 – 9.4 remains valid.

Protected Sites

A9.5 The relevant list of Protected Site's set out in paragraphs 9.5 – 9.8 remains valid.

Protected Species

A9.6 The relevant legislation on Protected Species set out in paragraph 9.9 remains valid.

Invasive weeds

A9.7 The relevant legislation on Invasive Weeds set out in paragraph 9.10 remains valid.

Planning Policy

The National Planning Policy Framework (NPPF)

A9.8 The relevant legislation, planning policy and guidance set out in paragraphs 9.11 – 9.17 remains valid.

Local Planning Policy

Kirklees Unitary Development Plan – The Natural Environment Strategy (as amended 2007)

A9.9 The relevant local policy for Kirklees Council set out in paragraphs 9.18 – 9.23 remains valid. However, Kirklees Council are currently progressing a new Local Plan [Ref 9.1], currently at EIP stage as of October 2017. This currently lends little weight to the following assessment, but is worth outlining. The relevant policies are provided below:

Policy PLP 30

Biodiversity & Geodiversity

The council will seek to protect and enhance the biodiversity and geodiversity of Kirklees, including the range of international, national and locally designated wildlife and

geological sites, Habitats and Species of Principal Importance and the Kirklees Wildlife Habitat Network.

Statutory Designated Sites
Statutory designated sites, including the South Pennine Moors Special Protection Area (SPA) and Special Area for Conservation (SAC) and Sites of Special Scientific Interest, are already highly protected through existing laws and legislation. In accordance with legislation, the Council will seek to ensure that harmful impacts to these areas as a result of development proposals are avoided.

Development proposed within or outside a designated Site of Special Scientific Interest, likely to have an adverse effect on the site's special nature conservation features, will not normally be permitted. Exceptionally development will be allowed where the benefits of the development clearly outweigh the impacts on the site's special conservation features and measures are provided to mitigate harmful impacts.

Local Designated Sites & Important Local Ecological Features
Proposals having a direct or indirect adverse effect on a Local Wildlife Site or Local Geological Site, Ancient Woodland, Veteran Tree or other important tree, will not be permitted unless the development can be shown to be of an overriding public interest and there is no alternative means to deliver the proposal. In all cases, full compensatory measures would be required and secured in the long term.

Habitats and Species of Principal Importance
Proposals will be required to protect Habitats and Species of Principal Importance unless the benefits of the development clearly outweigh the importance of the biodiversity interest, in which case long term compensatory measures will need to be secured.

Biodiversity and Development
Development proposals will be required to:-

(i) avoid significant loss or harm to biodiversity in Kirklees through protection, mitigation and compensatory measures secured through the establishment of a legally binding agreement;

(ii) minimise impact on biodiversity and provide net biodiversity gains through good design by incorporating biodiversity enhancements and habitat creation where opportunities exist;

(iii) safeguard and enhance the function and connectivity of the Kirklees Wildlife Habitat Network at a local and wider landscape-scale unless the loss of the site and its functional role within the network can be fully maintained or compensated for in the long term;

(iv) establish additional ecological links to the Kirklees Wildlife Habitat Network where opportunities exist; and

(v) incorporate biodiversity enhancement measures to reflect the priority habitats and species identified for the relevant Kirklees Biodiversity Opportunity Zone.

Policy PLP 31

Strategic Green Infrastructure Network
Within the Strategic Green Infrastructure Network identified on the Policies Map, priority will be given to safeguarding and enhancing green infrastructure networks, green infrastructure assets and the range of functions they provide.

Development proposals within and adjacent to the Strategic Green Infrastructure Network should ensure:-

(i) the function and connectivity of green infrastructure networks and assets are retained or replaced;

(ii) new or enhanced green infrastructure is designed and integrated into the development scheme where appropriate, including natural greenspace, woodland and street trees;

(iii) the scheme integrates into existing and proposed cycling and walking routes, particularly the Core Walking and Cycling Network, by providing new connecting links where opportunities exist;

(iv) the protection and enhancement of biodiversity and ecological links, particularly within and connecting to the Kirklees Wildlife Habitat Network.

The council will support proposals for the creation of new or enhanced green infrastructure provided these do not conflict with other local plan policies.

Policy PLP 34

Conserving and enhancing the water environment
Proposals will be supported which:

1. Do not result in the deterioration of water courses or water bodies (including groundwater) and conserve and enhance:

a. the natural geomorphology of watercourses, including reinstating watercourses to their natural state through removal of modifications resulting from past industrial uses;

b. water quality; and

c. the ecological value of the water environment, including the functionality of habitat networks.

…

Local Plan for the Bradford District Core Strategy Biodiversity and Geodiversity

A9.10 The relevant local policy for Bradford Council set out in paragraphs 9.24 – 9.27 have now been superseded by the City of Bradford Metropolitan District Council (CBMDC) Local Plan for the Bradford District - Core Strategy Development Plan Document adopted August 2017. [Ref A9.2] Policies relevant to Ecology are summarised below:

Policy EN2: Biodiversity and Geodiversity

The North and South Pennine Moors SPAs and SACs

A. *Any development that would be likely to have a significant effect on a European Site either alone or in combination with other plans or projects will be subject to assessment under the Habitat Regulations at project application stage. If it cannot be ascertained that there will be no adverse effects on site integrity then the project will have to be refused unless the derogation tests of Article 6(4) Habitats Directive can be met. Sites of*

Special Scientific Interest

B. *Proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest.*

Locally Designated Sites

C. *Development likely to have direct or indirect adverse effect on a site of ecological/ geological importance (SEGIs and RIGS) or a site of local nature conservation value (Bradford Wildlife Areas) will not be permitted unless it can be clearly demonstrated that there are reasons for the proposal which outweigh the need to safeguard the substantive nature conservation value of the site. Proposals that are likely to have an impact on such sites will be assessed according to the following criteria;*

1. Whether works are necessary for management of the site in the interests of conservation.

2. Whether appropriate mitigation measures, which could include adequate buffer strips, have been incorporated into the proposals to protect species and habitats for which the Locally Designated Site has been designated.

3. The development would be expected to result in no overall loss of habitat, through avoidance, adequate mitigation or, as a last resort, the provision of compensatory habitats adjacent to or within the vicinity of any losses proposed. Existing habitats and proposed mitigation or compensatory measures should be quantified.

Habitats and Species outside Designated Sites

D. *Proposals that may have an adverse impact on important habitats and species outside designated sites need to be assessed according to the following criteria:*

1. The potential for adverse impact on important/priority habitats that occur outside designated sites

2. The potential for adverse impact on species of international, national and local importance

3. The extent to which appropriate measures to mitigate any potentially harmful impacts can be identified and carried out

4. As a last resort, the extent to which appropriate measures to compensate any potentially harmful impacts can be identified and carried out.

The assessment needs to take account of: West Yorkshire Local Site Selection Criteria and Where relevant developers will be expected to submit (European) Protected Species surveys and other ecological assessment related information with their application.

Enhancement

E. Plans, policies and proposals should contribute positively towards the overall enhancement of the District's biodiversity resource.

They should seek to protect and enhance species of local, national and international importance and to reverse the decline in these species.

The Council will seek to promote the creation, expansion and improved management of important habitats within the district and more ecologically connected patchworks of grasslands, woodlands and wetlands. Opportunities for specific habitat creation within development proposals will be sought, including provision for future management.

The Council will seek to establish coherent ecological networks that are resilient to current and future pressures. Development which would cause serious fragmentation of habitats, wildlife corridors or have a significantly adverse impact on biodiversity networks or connectivity will be resisted.

Habitats of the moorland will be enhanced and landowners or occupiers will be actively encouraged to manage important areas for bird foraging to ensure continued provision of suitable habitat.

Where supported by evidence the Council will recognise foraging/ commuting areas for protected and SPA/SSSI qualifying features outside the statutory designated area as a material consideration in the preparation of development plans and in the determination of planning applications. Where supported by evidence, foraging sites, currently outside the SPA/SAC and SSSI will be considered for designation as a Locally Designated Site.

Other Guidance

The UK Biodiversity Action Plan (BAP);

A9.11 The relevant national planning policy and guidance set out in paragraph 9.28 remains valid.

Local Biodiversity Action Plan

A9.12 The relevant local planning policy and guidance set out in paragraph 9.29 remains valid.

Assessment Methodology and Significance Criteria

A9.13 The studies informing this assessment set out in paragraphs 9.30 – 9.32 remains valid.

A9.14 It is worth noting that since the July 2016 ES was produced, a second edition of the CIEEM Guidelines for Ecological Impact Assessment has been released [Ref. A9.3]. No material changes to these guidelines have been made.

Scope of Assessment

A9.15 The scope of the assessment set out in paragraph 9.33 remains valid.

Extent of Study Area

A9.16 The extent of the survey area, with regards to ecological assessment, set out in paragraphs 9.34 – 9.38 remains valid.

Consultation

A9.17 The status on consultation set out in paragraphs 9.39 – 9.42 remains valid.

A9.18 It is worth noting that on the 29th November 2016, consultees provided formal responses to the scheme, as proposed in the July 2016 ES. The Conservation and Design (Biodiversity) team confirmed that they held No Objection, provided Conditions relating to the submission of a Biodiversity Enhancement and Management Plan (BEMP), a Construction Environmental Management Plan (CEMP); and a lighting design strategy for biodiversity were imposed.

Method of Baseline Data Collection

Desk Study

A9.19 The desk study methodology set out in paragraphs 9.43 – 9.46, and Table 9.1 and 9.2 remains valid.

Aerial Photography and Detailed Map Study

A9.20 The aerial photography and map study methodology set out in paragraph 9.47 remains valid.

Natural England Natural Area

A9.21 The Natural England Natural Area information set out in paragraph 9.48 – 9.49 remains valid.

Extended Phase 1 Survey

A9.22 The Phase 1 Habitat Survey methodology set out in paragraphs 9.50 – 9.52 remains valid.

Bat Surveys

A9.23 The Bat Survey methodology set out in paragraphs 9.53 – 9.56 remains valid.

A9.24 Nerveless, it is worth noting that since the 2016 ES Chapter was completed, a third Edition of the BCT Bat Surveys – Good Practice Guidelines [Ref. A9.4] have been released. No material changes to these guidelines have been made.

Riparian Mammal Surveys

A9.25 The Water Vole Survey and Otter Survey methodology set out in paragraphs 9.57 – 9.58 remains valid.

White clawed Surveys

A9.26 The White Clawed Crayfish methodology set out in paragraph 9.59 remains valid.

Reptile Surveys

A9.27 The Reptile Survey methodology set out in paragraphs 9.53 – 9.56 remains valid.

Impact Assessment and Significance Criteria

Impact Assessment

A9.28 As previously mentioned, a second edition of the CIEEM Guidelines for Ecological Impact Assessment has now been released. Although no material changes to these guidelines have been made, that would impact on the conclusion of the 2016 ES, minor changes to wording and terminology is noted. These minor changes are summarised below:

A9.29 An EcIA should include potential impacts on each ecological feature determined as 'important' from all phases of the project, e.g. construction, operation and decommissioning. It should consider direct, indirect, secondary and cumulative impacts and whether the impacts and their effects are short, medium, long-term, permanent, temporary, reversible, irreversible, positive and/or negative. The significant effects must be assessed in the context of the predicted baseline conditions within the zone(s) of influence during the lifetime of the development.

A9.30 'Significance' is a concept related to the weight that should be attached to effects when decisions are made. For the purpose of EcIA, 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general.

A9.31 Significant effects should be qualified with reference to an appropriate geographic scale. The following frame of reference should be used, or adapted to suit local circumstances:

- International and European
- National
- Regional
- Metroolitan, County, vice-county or other local authority-wide area
- Local

A9.32 There could be any number of possible impacts on Important Ecological Features arising from a development. However, it is only necessary to describe in detail the

impacts that are likely to be significant. Impacts that are either unlikely to occur, or if they did occur are unlikely to be significant, can be scoped out. For transparency, justification for scoping out any ecological impact should be provided.

A9.33 When describing ecological impacts, reference should be made to the following characteristics. The assessment only needs to describe those characteristics relevant to understanding the ecological effect and determining the significance.

- positive or negative;
    - Positive (beneficial) impact – a change that improves the quality of the environment e.g. by increasing species diversity, extending habitat or improving water quality. Positive impacts may also include halting or slowing an existing decline in the quality of the environment.
    - Negative (adverse) impact – a change which reduces the quality of the environment e.g. destruction of habitat, removal
- extent; the spatial or geographical area over which the impact/effect may occur.
- magnitude; the size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population.
- duration; defined in relation to ecological characteristics (such as a species' lifecycle) as well as human timeframes. Effects may be described as short, medium or long-term and permanent or temporary. Short, medium, long-term and temporary will need to be defined in months/years.
- timing and frequency; the number of times an activity occurs will influence the resulting effect. The timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons e.g. bird nesting season.
- reversibility. an irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation.

Continuity with other Chapters

A9.34 Other disciplines within the ES classifies the effect of the development (both positive and negative impact) using the following measures. For continuity, the following EcIA will aim to follow this terminology.

- Substantial[4]
- Moderate[5]

[4] **Substantial** – considerable effects (by extent, duration or magnitude) or of more than local significance or breaching identified standards or policy.

- Minor[6]
- Negligible
- Beneficial / adverse

Baseline Conditions

Desk Study

A9.35 The Baseline Conditions of the Desk Study set out in paragraph 9.74 remains valid.

Statutory and Non-Statutory Designated Sites

A9.36 The Baseline Conditions of the Statutory and Non-Statutory Designated Sites set out in paragraphs 9.75 – 9.77 remains valid.

Protected and Notable Species Records

A9.37 The records of protected and notable species listed in paragraph 9.78 remains valid.

Field Survey

The Site's Habitats

A9.38 The description of the Site and its habitats set out in paragraphs 9.79 – 9.95 remains valid.

A9.39 Given the time that has elapsed since the original site visit was undertaken, it is likely that the list of plant species detailed in the July 2016 ES have now changed slightly. However, these changes would not have any material effect on the habitat types present on Site.

Invasive species

A9.40 The description of the invasive set out in paragraph 9.96 remains valid.

A9.41 Given the time that has elapsed since the original site visit was undertaken, it is possible that the extent of these plant species have changed slightly.

The Site's Faunal Value

A9.42 Appraisal of the Site's potential to support protected species set out in paragraph 9.97 remains valid.

Wildlife sites

A9.43 Information on statutory and non-statutory designated set out in paragraphs 9.98 – 9.99 remains valid.

Legal Compliance / Obligations

A9.44 Information on legal compliance / obligations set out in paragraphs 9.100 – 9.102 and Table 9.6 remains valid.

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[5] **Moderate** – limited effects which may be considered significant.
[6] **Minor** – slight, very short or highly localised effects.

Future Baseline

A9.45 The future baseline set out in paragraph 9.103 remains valid.

Nature Conservation Evaluation

A9.46 Summaries of the Important Ecological Features (IEF) set out in paragraph 9.104 – 9.105, and Table 9.7 remains valid. However, due to changes in the terminology used since the July 2016 ES was completed, an amended table is provided below:

Table A9.1 Summary of all relevant ecological features considered to be 'important'.

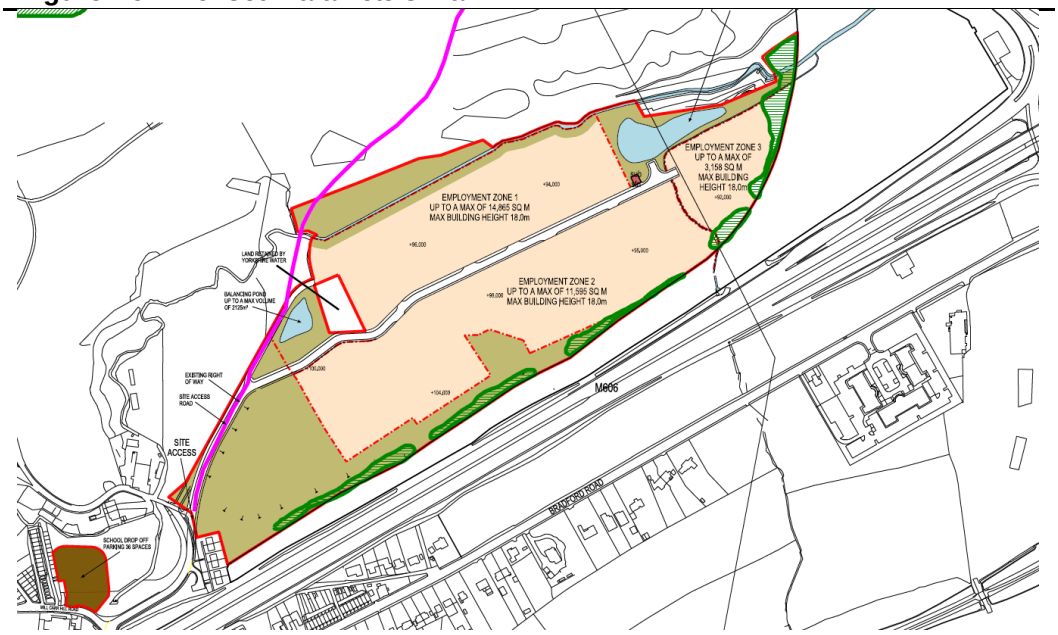
Important Ecological Feature	Geographical context	Notes
Within the site		
Hunsworth Beck	District	A short section of this beck passes through northeast corner of the site, constrained within an open culvert.
Invasive species	Local (adverse)	Three Schedule 9 species are recorded on site; concentrated along the western boundary and Hunsworth Beck.
Outside the site		
Hunsworth Beck	District	After flowing through the site, the beck continues southwards along the western boundary.
Hanging Wood	District	An area of broadleaf woodland, locally designated as a Kirklees – Site of Wildlife Significance (SWS), located along the sites western boundary.
Invasive species	Local (adverse)	Two Schedule 9 species are noted along the banks of Hunsworth Beck, immediately bordering the site.

Assessment of Effects, Mitigation and Residual Impacts

A9.47 Introductory information set out in paragraphs 9.106 – 9.108 remains valid.

A9.48 Nevertheless, the masterplan has been revised since the July 2016 ES; see Figure A9.1 below. The layout of the revised masterplan has no material impact on the outcome of the EcIA.

Figure A9.1 Revised Parameters Plan



Predicted Significant Effects in Construction Phase

A9.49 Despite changes to the masterplan, the predicted effects of the construction phase as set out in paragraphs 9.109 – 9.113 remains valid.

Hunsworth Beck

A9.50 The predicted effects of the construction activity and impacts on Hunsworth Beck, as set out in paragraphs 9.114 – 9.116, remains valid.

Hanging Wood

A9.51 The predicted effects of the construction activity and impacts on Hanging Wood, as set out in paragraphs 9.117 – 9.119, remains valid.

Invasive Species

A9.52 The predicted effects of the construction activity and impacts on Invasive Species, as set out in paragraphs 9.114 – 9.116, remains valid.

A9.53 The summary of the Predicted Effects of the Construction Phase in the Absence of Mitigation set out in Table 9.8 remains valid. However, due to changes in the terminology used since the July 2016 ES was completed, an amended table is provided below:

Table A9.2 Predicted Effects of the Construction Phase in the Absence of Mitigation

Important Ecological Feature	Impact(s)	Significance*
Hunsworth Beck (District)	Indirect impacts on watercourse resulting from adjacent construction site	Moderate Adverse

Hanging Wood (District)	Indirect impacts on woodlands resulting from adjacent construction site	Moderate Adverse
Invasive Species (Local)	Spread of Invasive species across Site	Minor Adverse

* Using terminology in keeping with other chapters – beneficial, adverse or neutral, and substantial, moderate or minor.

Predicted Significant Effects of the Operational Phase

A9.54 Despite changes to the masterplan, the predicted effects of the operational phase as set out in paragraphs 9.123 – 9.124 remains valid.

Hunsworth Beck

A9.55 The predicted effects of the operational activities and associated impacts on Hunsworth Beck, as set out in paragraphs 9.125 – 9.127, remains valid.

Hanging Wood

A9.56 The predicted effects of the operational activities and associated impacts on Hanging Wood, as set out in paragraphs 9.125 – 9.127, remains valid.

Invasive Species

A9.57 The predicted effects of the operational activities and associated impacts on Ivasive Species, as set out in paragraphs 9.125 – 9.127, remains valid.

A9.58 The summary of the Predicted Effects of the Operational Phase in the Absence of Mitigation, set out in Table 9.9, remains valid. However, due to changes in the terminology used since the July 2016 ES was completed, an amended table is provided below:

Table A9.3 Predicted Effects of the Operational Phase in the Absence of Mitigation

Important Ecological Feature	Impact(s)	Significance*
Hunsworth Beck (District)	Potential risk of pollution	Minor Adverse
Hanging Wood (District)	Disturbance resulting from adjacent commercial units	Minor Adverse
Invasive Species (Local)	Spread of Invasive species across Site	Minor Adverse

* Using terminology in keeping with other chapters – beneficial, adverse or neutral, and substantial, moderate or minor.

Mitigation

A9.59 The mitigation set out in paragraphs 9.134 – 9.154 and Table 9.10, remains valid.

Residual Impacts

A9.60 The residual impacts set out in paragraph 9.155 and Table 9.11, remains valid. However, due to changes in the terminology used since the July 2016 ES, an amended table is provided below:

Table A9.4 Summary of Residual Effects

Important Ecological Feature	Significance*	Impact	Period
Construction Phase			
Hunsworth Beck (District)	Negligible	N/A	Temporary
Hanging Wood (District)	Negligible	N/A	Temporary
Invasive species (Local)	Minor / Moderate	Beneficial	Temporary
Operational Phase			
Hunsworth Beck (District)	Negligible	N/A	Permanent
Hanging Wood (District)	Negligible	N/A	Permanent
Invasive species (Local)	Minor / Moderate	Beneficial	Temporary

* Using terminology in keeping with other chapters – beneficial, adverse or neutral, and substantial, moderate or minor.

Cumulative Effects

A9.61 The cumulative effects set out in paragraphs 9.156 – 9.159, remains valid.

References

A9.1 KMBC Local Plan – Publication Draft (2016)

A9.2 BMDC Adopted Core Strategy (2017)

A9.3 CIEEM (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

A9.4 Bat Conservation Trust (2016) Bat Surveys – Good Practice Guidelines, 3rd edition

A10. Flood Risk and Drainage

Purpose of the Assessment

A10.1 This Chapter provides an addendum to the assessment of the likely impacts of the Proposed Development on flood risk and drainage as included within the July 2016 ES. The addendum has been prepared due to revisions being made to the proposals as a result of comments made during the consultation period.

A10.2 This Chapter is prepared by Curtins

A10.3 In this chapter comments are made with regard to each section of the Flood Risk and Drainage chapter of the July 2016 ES in order to clarify whether the information presented remains valid, or whether the alternative parameters plan would result in changes to the assessment. An updated supporting Flood Risk Assessment has been prepared and is provided in **Addendum Technical Appendix A10.0,** which replaces the July 2016ES Technical Appendix 10.0.

Legislative Framework

National Policy and Legislation

A10.4 The relevant legislation, planning policy and guidance set out in paragraphs 10.5 – 10.24 remains valid. Although it is noted that since the July 2016 ES, KMBC has issued its Publication Draft Local Plan (2016). Paragraph 10.21 of the July 2016 ES incorrectly referenced Policies DLP28 and DLP29 – this should be PLP28 and PLP29. In the Publication Draft these policies have been retained and are known as PLP27 (Flood Risk) PLP28 (Drainage). The requirements of these policies remain unchanged. In addition, paragraph 10.24 refers to the Publication Draft of the BMDC Core Strategy. This has been superseded by the adopted version of the Core Strategy [Ref 10.2]. The Policy ENV7 remains unchanged.

Assessment Methodology

Surveys and Baseline Data Collection

A10.5 The surveys and baseline data collection set out in paragraph 10.25 of the Flood risk and Drainage chapter of the July 2016 ES remains valid.

Study Area

A10.6 The study area used within the Flood Risk and Drainage chapter of the July 2016 ES remains valid.

Assessment Methodology

A10.7 The assessment methodology set out in paragraph 10.27 – 10.28 of the Flood Risk and Drainage chapter of the July 2016 ES remains valid chapter remains valid.

Consultation

A10.8 The status on consultation set out in paragraph 10.29 of the Flood Risk and Drainage chapter of the July 2016 ES remains valid.

Significance Criteria

A10.9 The significance criteria used within paragraphs 10.30 – 10.31 of the Flood Risk and Drainage chapter of the July 2016 ES remains valid.

Baseline Conditions

A10.10 The baseline conditions set out within paragraphs 10.34 – 10.54 of the Flood Risk and Drainage chapter of the July 2016 ES remains valid.

Predicted Significant effects

A10.11 This section provides an updated assessment of the revised potential impacts of the Proposed Development, during both the construction and operational phases, based on the alternative parameters plan.

Effects during the demolition and construction phase – short term

A10.12 This section assesses the revised potential impacts of the Proposed Development during the demolition and construction phase.

A10.13 The effects set out within paragraphs 10.55 – 10.57 of the Flood Risk and Drainage chapter of the July 2016 ES remains valid.

Effects during operational phase: medium-term to long-term

A10.14 This section assesses the revised potential impacts of the Proposed Development during the operational phase.

Change in Flood Risk from Groundwater

A10.15 The change set out within paragraphs 10.58 – 10.59 of the Flood Risk and Drainage chapter of the July 2016 ES remains valid.

Change in Flood Risk from Surface Water Run Off

A10.16 The effect set out within paragraphs 10.60 – 10.61 of the Flood Risk and Drainage chapter of the July 2016 ES are amended to reflect the change from a residential and commercial development mix to a commercial only development.

A10.17 The site is a mix of greenfield and brownfield. As outlined in the FRA and Drainage Strategy report ground conditions on the Application Site for the commercial development area would support the management of surface water through attenuation basins before release into the site main drainage system. Whilst some storage volume will be provided within the main pipe runs, the main storage volume will be provided in landscaped attenuation basins within the Application Site. This is shown within the parameters plan and is considered embedded mitigation.

A10.18 It is envisaged the north and south parts of the commercial area will each discharge into Hunsworth Beck in different locations. In both cases surface water runoff rates will be reduced to greenfield rates as required by the LLPA. Specifically, a rate of 10.7 litres per second for the northern part of the commercial development and 37.5 litres per second for the southern part of the commercial development. The detail of this can be controlled through a detailed drainage strategy to be controlled by planning condition to take forward the strategy defined by the parameters plan.

A10.19 The change set out within paragraph 10.63 of the Flood Risk and Drainage chapter of the July 2016 ES relating to the proposed school car park remains valid

A10.20 Therefore, there is no change to paragraph 10.63 of the Flood risk and Drainage chapter stating that as the drainage strategy has been designed to accommodate surface water runoff to the satisfaction of Yorkshire Water and the two LLPA's, it is considered that the overall impact from development would be long-term, local and of **negligible beneficial significance** through the introduction of landscaped areas and surface water treatment devices.

Increased Demand for Water Supply

A10.21 The effects set out within paragraphs 10.64 – 10.65 of the Flood Risk and Drainage chapter of the July 2016 ES remains valid.

Increased Pressure on foul Water Infrastructure Capacity

A10.22 The effect set out within paragraphs 10.66 – 10.69 of the Flood Risk and Drainage chapter of the July 2016 ES are amended to reflect the change from a residential and commercial development mix to a commercial only development

A10.23 The proposed commercial elements of the Proposed Development have the potential to increase pressure on the existing foul water infrastructure. Initial discussions with Yorkshire Water's Technical Sewage Team have not identified any capacity issues with the existing infrastructure.

A10.24 The Yorkshire Water "Water Resources Plan" (2013) (Ref 10.2) confirms that the planned investment in the existing infrastructure has taken into account a growth in population up to 2040. This investment includes both waste water treatment as well as water supply.

A10.25 The Proposed Development includes separate drain systems for foul and surface water. The northern part of the commercial development element of the Proposed Development will connect to the public sewer by gravity. In addition, the buildings can be located to avoid the existing public sewer easements within this area of the site.

A10.26 Foul water from the southern part of the commercial development area of the Proposed Development will be collected via a Section 104 Adoptable foul sewer within the new access road which will flow southwards. An adoptable foul water pump station will be located in the southern corner of the Application Site to lift foul water back to the proposed discharge point upstream of the former inlet structure.

A10.27 Therefore, there is no change to paragraph 10.70 of the Flood risk and Drainage chapter stating that with appropriate detailed design the development is considered to have a **negligible significance** on the capacity of foul water infrastructure.

Scope of Mitigation

A10.28 The mitigation measure set out within paragraphs 10.71 – 10.74 of the Flood Risk and Drainage chapter of the July 2016 ES remains valid.

Residual Effects Assessment

A10.29 The residual effects summary set out within paragraphs 10.75 – 10.76 and Table 10.3 of the Flood Risk and Drainage chapter of the July 2016 ES remains valid and is replicated below.

Table A10.1 Summary of Residual Effects

Construction / Operational	Impact	Impact Significance	Adverse / Beneficial	Impact Local, Regional, National	Direct/Indirect (D/I) Permanent/temporary (P/T) Period (ST/MT/LT)	Mitigation	Residual Impact Significance	Adverse / Beneficial	Local, Regional, National	Direct/Indirect (D/I) Permanent/temporary (P/T) Period (ST/MT/LT)
Construction	**Contamination of water recourses**	**Moderate**	**Adverse**	**Local**	**D/T/ST**	**CEMP**	**Negligible**			**D/T/ST**
	Change in Flood Risk from Groundwater	**Minor**	**Adverse**	**Local**	**D/T/ST**	**-**	**Negligible**	**-**	**-**	**D/T/ST**
Operational	**Change in Flood Risk from Groundwater**	**Negligible**	**-**	**-**	**D/T/LT**	**-**	**Negligible**	**-**	**-**	**D/T/LT**
Operational	**Change in Flood Risk from Surface Water Runoff**	**Negligible**	**-**	**-**	**D/P/LT**		**Negligible**	**-**	**-**	**D/P/LT-**
Operational	**Increase Demand for Water Supply**	**Minor**	**Adverse**	**Regional**	**D/P/LT**	**Use of Water Efficient Systems**	**Negligible**	**-**	**-**	**D/P/LT**
Operational	**Increased Pressure on Foul Water Infrastructure capacity**	**Negligible**	**-**	**-**	**D/P/LT**		**Negligible**	**-**	**-**	**D/P/LT**

Cumulative Effects Assessment

A10.30 The cumulative effects assessment set out within paragraph 10.77 of the Flood Risk and Drainage chapter of the July 2016 ES remains valid.

Monitoring

A10.31 The points on monitoring in the Flood Risk and Drainage chapter (paragraph 10.78) of the July 2016 ES remain valid.

References

A10.1 KMBC Publication Draft Local Plan (2016)

A10.2 BMDC Adopted Core Strategy (2017)

A11. Transportation

Purpose of the Assessment

A11.1 This chapter provides details of the potential Traffic and Transport impacts as part of the Environmental Statement Addendum (ESA). The original ES produced in July 2016 still stands, except where specifically advised otherwise. AECOM have prepared this chapter along with a revised Transport Assessment document, provided within ESA **Addendum Technical Appendix A11.0 and draft Travel Plan Addendum Technical Appendix A11.1**, which replaces the July 2016 ESA 11.0 and 11.1.

A11.2 This Chapter is prepared by AECOM. The development land uses and size are set out in Chapter A4, and are outlined as follows:

- Office (B1) land use = 2,648 m^2
- Warehouse (B2 / B8) land use = 32,637m^2
- Total = 35,285m^2

Legislative and Policy Framework

A11.3 Information on the following policy documents, which relate to Traffic & Transportation, has not changed, therefore information provided within the July 2016 ES remains valid:

- The National Planning Policy Framework (NPPF), March 2012 (Ref 11.1) – Paragraphs 11.5-11.6;
- West Yorkshire Local Transport Plan 2011-2026 (Ref 11.2) – Paragraphs 11.7-11.8 ;
- Kirklees UDP (Saved Policies) (Ref 11.3) – Paragraphs 11.9-11.12;
- Bradford Replacement Unitary Development Plan (RUDP) - Saved Policies (2005) (Ref 11.5) – Paragraph 11.5; and

A11.4 The following documents have changed, therefore the specified information provided within the July 2016 ES is no longer valid:

- IEMA EIA Guidelines (Ref 11.7) – Paragraphs 11.20-11.22;
- Kirklees Local Plan (Ref 11.4) – Paragraphs 11.13-11.14; and
- City of Bradford MDC Core Strategy (Ref 11.6) – Paragraphs 11.16-11.18.

A11.5 These paragraphs from the July 2016 ES have been replaced by the following sections:

Town & Country Planning Act Environmental Impact Assessment (EIA) Regulations 2017

A11.6 On 16 May the Town and Country Planning EIA Regulations 2011 were revoked and replaced by the EIA Regulations 2017[Ref A11.1].

A11.7 The 2017 Regulations transpose the latest changes introduced by EU Directive 2014/52/EU and will introduce changes to EIA at all stages in the process, covering the need for greater detail at screening, the enforceability of scoping opinions, detailed reasons in decision-making, the use of 'experts' in drafting and assessing the Environmental Statements (ES), new topics to be assessed and more focus on significant effects and future monitoring obligations.

A11.8 The aim of the 2017 Regulations is to reduce the number of EIAs, so that there is a greater likelihood of borderline developments being screened out at an early stage, once proposed mitigation measures have been taken into account. However the repercussions of the changes may also result in more opportunities for legal challenge by objectors to development.

A11.9 Fundamentally, the guidance referring to the assessment of specific traffic and transport impact magnitude as part of the ES has not changed.

Kirklees Local Plan

A11.10 The Kirklees Local Plan Publication Draft [Ref 11.2] was submitted to the Secretary of State for Communities and Local Government on 25 April 2017, so that it can be examined by an independent Inspector. The Planning Inspector will work together with an independent Programme Officer to then conduct the public examination of the plan. This took place in October 2017.

A11.11 The application site is identified as housing and employment allocation within the local plan, as site E1985a. The site has been identified within the Local Plan as one several new employment land allocations in order to achieve a 75% employment rate over the plan period.

A11.12 The following has also been stated: 'Recognising its role in terms of market demand, available land supply and access to the strategic road network, prime new employment development is located along the M62 corridor to the north of Kirklees and in the Dearne Valley where easier access can be achieved to the M1 through.' - *Draft Local Plan Strategies and Policies – Pg 36.*

City of Bradford MDC Core Strategy

A11.13 The Bradford Council Core Strategy is a key Development Plan Document (DPD) that forms part of the Local Plan for the Bradford District. The Core Strategy sets the key development requirements and location strategy for the district. It was adopted by the Council in August 2017. [Ref A11.3]

A11.14 In terms of Transport and Accessibility the Core Strategy sets out that a key aim is to reduce the need to travel with Policy TR1 setting out how this aim will be realised.

A11.15 Pedestrian and cycle links are also essential for the delivery of the Local Plan, with Policy TR3 setting out the required accessibility criteria as well as requiring new developments to be set out such that these alternative modes can be encouraged.

Assessment Methodology

A11.16 The methodology provided in Paragraphs 11.19 to 11.22 of the July 2016 ES remain valid.

Significance Criteria

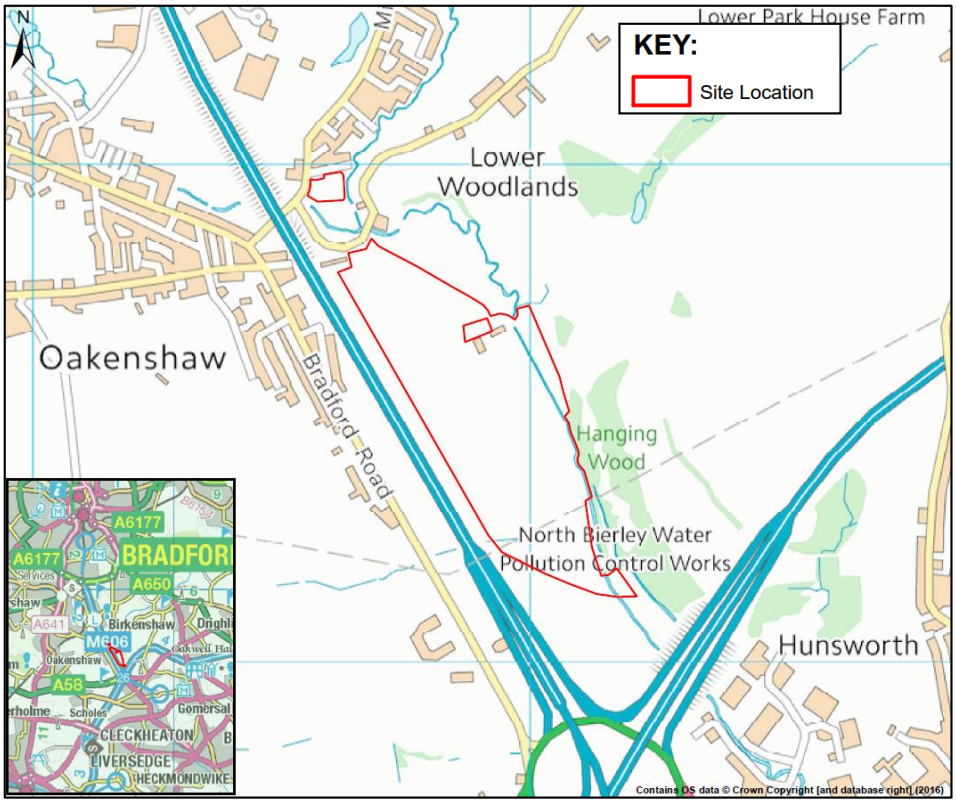
A11.17 The significance criteria provided in Paragraphs 11.23 to 11.27 of the July 2016 ES remain valid.

Study Area

A11.18 Paragraph 11.28 of the July 2016 ES is no longer relevant and is replaced by the following information.

A11.19 For the purposes of consistency and robustness, the local road network assessed for this ES chapter has included the same geographical road network that is presented within the TA. A location plan is provided in Figure A11.1.

Figure A11.1 Site Location



Surveys

A11.20 Details of surveys provided in Paragraphs 11.29 to 11.32 of the July 2016 ES remain valid.

A11.21 Paragraph 11.33 of the July 2016 ES is no longer relevant and is replaced by the following information.

A11.22 The assessment of the highway impact considers the change in conditions between the Baseline scenario (2017 and 2022) and 'with' Development scenario (2017 and 2022).

A11.23 The 2013 surveyed traffic data has been factored up to the above years using industry standard methods, which is considered a robust approach and was also agreed with the Local Highway Authority. Within the assessment, no committed scheme scenarios are to be

considered, as agreed with the Local Highway Authority. A further description of these methods is provided in the Transport Assessment (**Addendum Technical Appendix A11.0**).

Consultation

A11.24 Details on consultation provided in Paragraph 11.34 of the July 2016 ES remain valid.

Baseline Conditions

A11.25 Details on the baseline conditions provided in Paragraphs 11.35 to 11.36, 11.38 to 11.40 and 11.42 to 11.44 of the July 2016 ES remain valid.

A11.26 Paragraph 11.37 of the July 2016 ES is no longer relevant and is replaced by the following.

A11.27 The 2017 baseline assessments demonstrate that all of the junctions on the network currently operate within capacity in the base scenario.

A11.28 Paragraph 11.41 of the July 2016 ES is no longer relevant and is replaced by the following.

'The nearest railway facilities to the development site are provided at Low Moor railway station, which is approximately 1400m from the proposed development site. Although further than the CIHT suggested walking distance, it is considered that the station provides a realistic option for sustainable travel to / from the proposed development site'

A11.29 The station provides a link into Bradford, Huddersfield and Leeds, where there are additional bus and rail services linking to wider public transport networks within a relatively short journey time.

Predicted significant effects (the assessment)

A11.30 Information provided in Paragraph 11.45 of the July 2016 ES remains valid.

Effects during construction phase

A11.31 Information provided in Paragraphs 11.46 to 11.50 of the July 2016 ES remains valid.

Traffic Flows

Effects during operational phase

A11.32 Information provided in Paragraph 11.51 of the July 2016 ES remains valid (including Figure 11.1) as do Tables 11.7 and 11.8.

A11.33 Paragraphs 11.52 and 11.53 (including Tables 11.5 and 11.6) within the July 2016 ES are no longer relevant and are replaced by the following.

A11.34 As per the IEMA guidelines, an exercise has been undertaken to identify links, within the previously identified and agreed geographical study area, where development trips represent a potential increase in total vehicles of 30% or more.

A11.35 Tables A11.1 and A11.2 summarise links that have been identified and considers the magnitude of the each of the development options on an individual basis.

Table A11.1 Magnitude of Impact (2017)

Link Name	2017 Base	Base + Dev	Difference	% Change	Magnitude of Impact
Cliff Hollins Lane (east)	2597	2639	42	2%	Negligible
Cliff Hollins Lane (west)	2597	3944	1347	52%	Negligible
Mill Carr Hill Road (east)	3804	3845	41	1%	Minor
Mill Carr Hill Road (west)	6016	7321	1305	22%	Minor
Bradford Road (north)	16427	16704	277	2%	Negligible
Bradford Road (south)	15599	16626	1027	7%	Negligible

Table A11.2 Magnitude of Impact (2022)

Link Name	2022 Base	Base + Dev	Difference	% Change	Magnitude of Impact
Cliff Hollins Lane (east)	2765	2807	42	2%	Negligible
Cliff Hollins Lane (west)	2765	4111	1346	49%	Negligible
Mill Carr Hill Road (east)	4049	4091	42	1%	Minor
Mill Carr Hill Road (west)	6404	7709	1305	20%	Minor
Bradford Road (north)	17485	17763	278	2%	Negligible
Bradford Road (south)	16604	17631	1027	6%	Negligible

Severance

A11.35 Information provided in Paragraphs 11.54 and 11.55 of the July 2016 ES remains valid.

A11.36 Paragraph 11.56 within the July 2016 ES is no longer relevant and is replaced by the following:

'Whilst it has been shown that the traffic flows on Cliff Hollins Lane (west) are anticipated to increase in excess of 30% it is considered that the development will avoid severance of the road for pedestrians'.

A11.37 However, the increase in traffic will result in an adverse impact in terms of severance, primarily due to the fact the school lies close by and could be affected. The effects of traffic are generally considered to be more adverse close to sensitive receptors such as schools. Based on this assumption, the worst case effects would be considered as Moderate Adverse.

Driver Delay

A11.38 Information provided in Paragraphs 11.57 to 11.59 and 11.61 to 11.62 of the July 2016 ES remains valid.

A11.39 Paragraph 11.60 and Tables 11.9 to 11.10 within the July 2016 ES are no longer relevant and are replaced by the following.

A11.40 As part of the operational assessments, highway capacity driver delay is considered. It was shown at all of the assessed junctions, with the addition of development traffic, that the junctions are anticipated to continue to operate within capacity, therefore resulting in minimal driver delay. A summary of the junction operational assessments is provided in Table A11.3, including details of the predicted overall operation and queue lengths associated with each development phase.

Table A11.3 Operational Assessment Summary (Including Development Traffic)

Junction	2017		2022	
	AM	PM	AM	PM
	Capacity (Queue)	Capacity (Queue)	Capacity (Queue)	Capacity (Queue)
Site Access / Cliff Hollins Lane	N/A	N/A	✓(0)	✓(0)
Cliff Hollins Lane / Mill Carr Hill Rd	✓(1)	✓(1)	✓(3)	✓(1)
Mill Carr Hill Rd / Bradford Rd	✓(4)	✓(9)	✓(4)	✓(8)

Table A11.4 Key to Operational Assessment Terms

Reference	
Under Capacity	✓

Over Capacity	×

Pedestrian Delay

A11.41 Information provided in Paragraphs 11.63 to 11.65 of the July 2016 ES remains valid.

Pedestrian Amenity

A11.42 Information provided in Paragraphs 11.66 to 11.68 of the July 2016 ES remains valid.

Fear and Intimidation

A11.43 Information provided in Paragraphs 11.69 and 11.70 of the July 2016 ES remains valid.

Road Safety

A11.44 Information provided in Paragraphs 11.71 and 11.72 of the July 2016 ES remains valid.

A11.45 Information provided in Paragraph 11.73 and Table 11.11 of the July 2016 ES remains valid.

Scope of mitigation

A11.46 Information provided in Paragraph 11.74 and Tables 11.12 to 11.14 of the July 2016 ES remains valid.

Residual effect assessment

A11.47 Information provided in Paragraphs 11.75 to 11.77 of the July 2016 ES remains valid. Table 11.15 also remains valid and is replicated here for completeness.

Table A11.5 Summary of Residual Effects

Nature of Effect	Impact Area	Period	Significance of Effect (Pre-Mitigation)	Significance of Effect (Post-Mitigation)	Mitigation Measure
Severance	Local / Neighbourhood	Permanent	Moderate Adverse	Negligible	OM1, OM2, OM3
Driver Delay	Local / Neighbourhood	Permanent	Moderate Adverse	Minor Adverse	OM1, OM2, OM3, OM4
Pedestrian Delay	Local / Neighbourhood	Permanent	Moderate Adverse	Minor Beneficial	OM1, OM2, OM4

Nature of Effect	Impact Area	Period	Significance of Effect (Pre-Mitigation)	Significance of Effect (Post-Mitigation)	Mitigation Measure
Pedestrian Amenity	Local / Neighbourhood	Permanent	Negligible	Negligible	OM1, OM2, OM4
Fear and Intimidation	Local / Neighbourhood	Permanent	Negligible	Negligible	OM1, OM2
Road Safety	Local / Neighbourhood	Permanent	Moderate Adverse	Negligible	CM2, OM1, OM2, OM4

References

A11.1 Town and Country Planning (Environmental Impact Assessment) Regulations 2017

A11.2 Kirklees Publication Draft (2016)

A11.3 Bradford Adopted Strategy (2017)

A12. Noise and Vibration

A12.1 This chapter of the ES addendum relates to the changes in scheme design, policy, guidance and technical assessment methodology since the July 2016 ES, and addresses comments from Kirklees Council regarding the July 2016 ES Noise and Vibration Chapter.

A12.2 This Chapter is prepared by AECOM

A12.3 Since the July 2016 ES, changes to the layout of the site have been made and are now being assessed. The new scenario takes into consideration Highways England's land requirements for potential improvements to the M606 and M62 Junction (Junction 26), removal of the residential element and increase in the size of the proposed employment zone of the proposed scheme.

A12.4 To support the July 2016 ES, baseline sound surveys were undertaken at a number of locations in March and April 2014 and July 2015. Further baseline surveys were conducted between February – March 2017 to undertake further assessment of the residential elements of the scheme. Although the residential elements have been removed, the results of the further baseline surveys will be used where appropriate in this addendum.

A12.5 A list of acoustic abbreviations and definitions can be found in Section 8.

A12.6 In this Chapter comments are made with regards to each section of the Noise and Vibration Chapter of the July 2016 ES in order to clarify whether the information presented remains valid of whether the revised scheme would result in changes to the assessment.

Summary of Assessment to Date

A12.7 The previous noise assessments undertaken as part of the July 2016 ES considered both the temporary construction noise effects on existing Noise Sensitive Receptors (NSRs) and the effects of noise from existing and proposed new noise sources after completion of the development on existing and proposed new NSRs. The suitability of the Application Site for residential led development was also assessed.

A12.8 Baseline noise surveys were undertaken in 2014 at multiple off-site locations close to NSRs on Bradford Road and Cliff Hollins Lane, and at an on-site location along the western boundary of the application site in 2015 in order to inform the July 2016 ES.

Updated Standards and Legislation

A12.9 Since the July 2016 ES, Local Planning Policy guidance has been updated with the document West Yorkshire Planning Consultation Guidance (WYPCG), May 2016. The WYPCG makes direct reference to the Noise Policy Statement for England, which has also been included below as an introduction to effect level terminology used throughout this Addendum.

Noise Policy Statement for England (2010) [Ref 12.1]

A12.10 The Noise Policy Statement for England (NPSE) seeks to clarify the underlying principles and aims in existing policy documents, legislation and guidance that relate to noise. The statement applies to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise.

A12.11 The statement sets out the long term vision of the government's noise policy, which is to "promote good health and a good quality of life through the effective management of noise within the context of policy on sustainable development".

This long term vision is supported by three aims:

- "avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life; and
- Where possible, contribute to the improvements of health and quality of life."

A12.12 The long term policy vision and aims are designed to enable decisions to be made regarding what is an acceptable noise burden to place on society.

A12.13 The 'Explanatory Note' within the NPSE provides further guidance on defining 'significant adverse effects' and 'adverse effects' using the concepts:

- No Observed Effect Level (NOEL) - the level below which no effect can be detected. Below this level no detectable effect on health and quality of life due to noise can be established;
- Lowest Observable Adverse Effect Level (LOAEL) - the level above which adverse effects on health and quality of life can be detected; and
- Significant Observed Adverse Effect Level (SOAEL) - the level above which significant adverse effects on health and quality of life occur.

The three aims can therefore be interpreted as follows:

- The first aim is to avoid noise levels above the SOAEL.
- The second aim considers situations where noise levels are between the LOAEL and SOAEL. In such circumstances, all reasonable steps should be taken to mitigate and minimise the effects. However this does not mean that such adverse effects cannot occur.
- The third aim seeks, where possible, to positively improve the health and quality of life through the pro-active management of noise whilst also taking account of the guiding principles of sustainable development.

A12.14 The NPSE recognises that it is not possible to have single objective noise-based measures that define the SOAEL, LOAEL and NOEL that are applicable to all sources of noise in all situations. The levels are likely to be different for different noise sources, different receptors and at different times of the day.

Kirklees Council Guidance

West Yorkshire Planning Consultation Guidance [Ref 12.2]

A12.15 Paragraphs 12.52 – 12.55 (Consultation) of the July 2016 ES, have been superseded by the WYPCG as detailed below. The following is additional Local Policy Guidance.

A12.16 The WYPCG is intended to "provide a condensed guide to developers and Environmental Health Professionals when reviewing planning applications and making recommendations to Planning Services on matters relating to noise and vibration".

A12.17 When assessing planning applications, the document states that the Planning Authority will have due regard to the aims of the NPSE (see above) and National Planning Policy Framework, 2012. It is stated that:

- "The Planning Authority will normally support refusal where the noise impact on sensitive receptors exceeds SOAEL, however mitigating factors such as the local authority's on-going support of local regeneration will be taken into consideration.
- The Planning Authority will normally recommend conditions to mitigate noise impacts where the noise levels exceed the LOAEL, but are lower than the SOAEL criterion."

A12.18 Section 5 of the *WYPCG* presents guidance on consideration of noise at proposed developments containing noise sensitive users. Appendices 1 and 2 of the document present guideline *"Absolute" and "Relative"* sound level criteria and set out how these equate to NOELs, LOAELs and SOAELs.

A12.19 This document supplements the Kirklees Unitary Development Plan (2007).

Kirklees Council Publication Local Plan (Draft) November 2016 [Ref 12.3]

Section 3 of the Kirklees Council Publication Draft Local Plan discusses the Issues facing Kirklees, Issue 8 relating to noise pollution and the Kirklees Councils draft response has been included below:

"*What opportunities can be provided to improve quality of life, health and well-being to ensure that environmental quality be sustained and improved especially where standards are not met?*

Environmental quality can be affected by air, noise, light, odour and other forms of pollution that impact on quality of life, well-being of people and the environment…Other forms of pollution also impact on the environment and quality of life. Noise in particular can be an issue for Kirklees residents as noise from traffic and nearby industry can be a problem. Again policies are in place to protect residents from elevated noise levels."

Bradford Metropolitan District Council (BMDC) Guidance

Core Strategy – Environment, July 2017 [Ref 12.4]

Section 5.4, Planning for Places – Environment, of the BMDC Core Strategy states the following in relation to noise nuisance:

"Nuisance issues, for example, noise, dust, odour and lighting can have a significant impact on quality of life, community cohesion, health and amenity. These issues are also material planning considerations. When identifying land for future development and responding to

developer's proposals, account needs to be taken of existing land uses in the vicinity of the site e.g. proposed residential development adjacent to existing factory operating 24 hours per day and when new developments may create additional noise. Every effort must be made to ensure that nuisance problems are not generated during construction or operation."

Policy EN8: Environmental Protection within the same document states:

In order to protect public health and the environment the Council will require that:

"Proposals which are likely to cause pollution or are likely to result in exposure to sources of pollution (including noise, odour and light pollution) or risks to safety, will only be permitted if measures can be implemented to minimise pollution and risk to a level that provides a high standard of protection for health, environmental quality and amenity. The following issues require particular attention:

Nuisance Proposals for development must identify potential nuisance issues (including noise, vibration, odour, light and dust) arising from the nature of the proposal and address impacts on that development from existing land uses."

Consultation

A12.20 A consultation response to the July 2016 ES was received from Richard Hume (Kirklees Council) in September 2016. The majority of the comments related to use of the Application Site for residential development. However, this addendum still takes into consideration the comments relating to the operation of the proposed commercial development.

A12.21 Telephone consultation was undertaken between Nathan Green (AECOM) and Richard Hume in January 2017, to discuss baseline measurement locations in relation to further monitoring for the residential element of the scheme.

A12.22 Since the removal of the residential element from the Proposed Scheme, additional email consultation has been undertaken between Nathan Green and Richard Hume in October 2017, more specifically to agree the BS 4142:2014 *rating level* criterion. It was agreed that criteria established within the WYPCG would be the most suitable when assessing sound from industrial sources.

Updated Assessment Methodology

A12.23 Paragraphs 12.11 – 12.18, 12.24-122.29 (including Table 12.6) and 12.33 -12.37 of the July 2016 ES have been retained. Paragraphs 12.19 to 12.23 (including Table 12.3) are no longer relevant. Paragraphs 12.30 to 12.31 and Table 12.7 have been replaced.

Impact of Industrial Sound Sources on Noise Sensitive Receptors

A12.24 Suitable criteria are proposed within this Addendum based upon the guidance in BS 4142: 2014 'Methods for rating and assessing industrial and commercial sound'. (Ref 12.5)

A12.25 A key aspect of the BS 4142 assessment procedure is a comparison between the background sound level in the vicinity of residential locations and the rating level of the sound source under consideration. The relevant parameters in this instance are as follows:

- Background sound level – $L_{A90,T}$ – defined in the Standard as the 'A-weighted sound pressure level that is exceeded by the residual sound for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels';

- Specific sound level – Ls ($L_{Aeq,Tr}$) – the 'equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, Tr'; and

- Rating level – $L_{Ar,Tr}$ – the 'specific sound level plus any adjustment made for the characteristic features of the sound'.

A12.26 Whereas the previous version of BS 4142:1997 allowed for a single correction of +5 dB to be made to the specific noise level if one or more of the distinguishable, impulsive or irregular features were considered to be present, BS 4142: 2014 allows for corrections to be applied based upon the presence or expected presence of the following:

- Tonality: up to +6 dB penalty

- Impulsivity: up to +9 dB penalty (this can be summed with tonality penalty)

- Other sound characteristics (neither tonal or impulsive but still distinctive) :+ 3 dB penalty

A12.27 Once any adjustments have been made, the *background sound levels* and the *rating levels* are compared. The standard states that:

- 'Typically, the greater the difference, the greater the magnitude of impact.

- *A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending upon the context.*

- *A difference of around +5 dB is likely to be an indication of an adverse impact, depending upon the context.*

- *The lower the rating level is compared to the measured background sound level, the less likely it is that the specific sound will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending upon the context.'*

A12.28 Table A12.1 illustrates the adopted magnitude of impact scale for BS 4142:2014 assessments based upon the numerical level difference between the *rating level* and *background sound level*. For indicative assessment purposes the SOAEL is set at a *rating level* above *background sound level* of +10 dB, and the LOAEL at +5 dB.

Table A12.1: Magnitude of Impact for Industrial Sound

Magnitude of Impact	BS 4142 Descriptor	*Rating level – Background sound level* (dB)
High	No BS 4142 descriptor for this magnitude level	>15
Medium	Indication of a significant adverse impact, depending upon context	+10 approx.
Low	Indication of an adverse impact, depending upon context	+5 approx.
Very Low	Indication of low impact, depending upon context	≤ 0

A12.29 Section 4.2 of the WYPCG, *Proposed Developments Containing Noise Sensitive users: Noise from Industrial Sources*, provides the following criteria for suitable noise levels.

- The *rating level* (calculated in accordance to BS 4142:2014) is at least 10 dB below the existing *ambient sound level* (L_{Aeq});
- The *rating level* (calculated in accordance to BS 4142:2014) does not exceed the existing *background sound level* (L_{A90});
- Between the hours of 19:00 and 07:00, the maximum noise levels (L_{AFmax}) shall not exceed the L_{A90} by more than 10 dB; however, where the existing *background sound level* is 45 dB L_{A90} or less, the maximum noise levels shall not exceed 60 dB L_{AFmax}.

A12.30 The assessment will take account of these recommendations provided by the West Yorkshire Combined Authority.

Sensitivity of Receptors

A12.31 *Paragraph 12.38 and Table 12.9 of the July 2016 ES has been updated with the following:*

A12.32 In accordance with the principles of environmental impact assessment, the sensitivity of receptors (existing and proposed) to noise or vibration impacts during either construction or operational phases have been defined in Table A12.2.

Table A12.2: Sensitivity/Value of Receptor

Sensitivity/Value of Resource/Receptor	Description	Examples of Receptor Usage
Very High	Receptors where noise or vibration will significantly affect the function of a receptor	Auditoria/studios; Specialist medical/teaching centres, or laboratories with highly sensitive equipment; and
High	Receptors where people or operations are particularly susceptible to noise or vibration. Sensitive ecological receptors known to be vulnerable to the effects of noise or vibration.	Residential; Quiet outdoor areas used for recreation; Conference facilities; Schools/educational facilities in the daytime; Hospitals/residential care homes; Libraries; and Ecologically sensitive areas for example Special Protection Areas (SPAs)
Medium	Receptors moderately sensitivity to or vibration where it may cause some distraction or disturbance	Offices; Restaurants; and Sports grounds when spectator or noise is not a normal part of the event and where quiet conditions are necessary (e.g. tennis, golf).
Low	Receptors where distraction or disturbance of people from noise or vibration is minimal	Residences and other buildings not occupied during working hours; Factories and working environments with existing high noise levels; and Sports grounds when spectator or noise is a normal part of the event.

Significance Criteria

A12.33 The following terminology has been used in the assessment to define effects:

- Adverse – detrimental or negative effects to an environmental resource or receptor;
- Negligible – imperceptible effects to an environmental resource or receptor; or
- Beneficial – advantageous or positive effect to an environmental resource or receptor.

A12.34 Where adverse or beneficial effects have been identified, these have been assessed against the following significance scale:

- Minor – slight, very short or highly localised effect of no significant consequence;
- Moderate – limited effect (by extent, duration or magnitude), which may be considered significant; or
- Major – considerable effect (by extent, duration or magnitude) of more than local significance or in breach of recognised acceptability, legislation, policy or standards.

Table A12.3: Classification of Effects

Sensitivity/Value of Resource/Receptor	Magnitude of Impact			
	High	**Medium**	**Low**	**Very Low**
Very High	Major	Major	Moderate	Minor
High	Major	Moderate	Minor	Negligible
Medium	Moderate	Minor	Negligible	Negligible
Low	Minor	Negligible	Negligible	Negligible

Significance of effects

A12.35 The 'Significance of Effects' Section replaces Paragraph 12.56 and Table 12.11 of the July 2016 ES.

A12.36 The significance of effect resulting from each individual potential impact type above is derived from the magnitude of the impact and the sensitivity or value of the affected receptor using the matrix presented in Table A12.3 below.

A12.37 With respect to the Classification of Effects outcomes from Table A12.3, effects of negligible and minor adverse (or beneficial) are considered to be not significant, whereas effects of moderate and major adverse (or beneficial) are considered to be significant.

Study Area

A12.38 The third bullet point of paragraph 12.39 in the July 2016 ES should be removed.

Surveys

A12.39 Paragraphs 12.40 to 12.51 are replaced with the following.

A12.40 The location of existing residential NSRs in close proximity to the Application Site have been considered when assessing the effects associated with noise and vibration levels from the construction and operational phases of the Development.

A12.41 Monitoring locations were selected in early 2017 which were considered to be representative of the nearest and potentially most noise sensitive receptors to the Development, and also the closest residential NSRs within the Development to existing noise sources. It is considered that, if noise and vibration levels are suitably controlled at the key NSR identified, then noise and vibration levels will be suitably controlled at other sensitive NSR in the surrounding area.

A12.42 Whilst the development no longer contains a proposed residential area, some of the data collected during the 2017 surveys are still considered applicable to the current Development proposals and have therefore been presented within this addendum.

A12.43 Unattended ambient sound monitoring was undertaken at two locations (ML1 and ML2) between the 17th - 19th February 2017 and between 10th – 15th March 2017. Both locations were selected due to their proximity and exposure to road traffic noise from the surrounding road network, which includes the M606, M62 and Bradford Road (running north-south to/from Oakenshaw to the west of the M606). Data collected at Monitoring Location (ML1) remains of use in this assessment.

A12.44 Additional daytime and night-time manned measurements were undertaken at two positions near to existing NSRs. The manned measurements were recorded between 00:00 – 02:15 hours and 12:00 – 14:30 hours on Tuesday 21 February 2017.

A12.45 Table A12.4 describes the monitoring locations that were selected for the 2017 sound monitoring; the locations can are also presented in Appendix AA.1.

Table A12.4: Monitoring Locations

Location	Description
ML1 (Unattended)	Located along the eastern boundary of the Application Site, adjacent to the existing water treatment works access road, and approximately 45 metres from the water treatment works entrance.
ML3 (Attended)	Located to the north of the Application Site on the pedestrian footpath near to the existing residential properties on Cliff Hollins Lane.
ML4 (Attended)	Located to the west of Bradford Road south of the existing residential properties.

A12.46 The microphones were located approximately 1.5 meters above ground level and considered to be in free-field conditions (i.e. the microphone was positioned far enough from any reflecting surface (other than the ground) in order to avoid significant reflected sound) at all measurement locations.

A12.47 In addition to the sound monitoring surveys, listening tests were also carried out at the northern boundary on Cliff Hollins Lane and to the west of the Application Site on Bradford Road between 00:00 – 02:15 and 12:00 – 14:30 on Tuesday 21st February 2017.

Sound Survey Instrumentation

A12.48 Information relating to the measurement equipment during the survey is presented in Table A12.5 below.

Table A12.5: 2017 Sound Monitoring Equipment

Instrument	Manufacturer	Model	Serial Number
Class 1 Sound Level Meter ML1	Rion	NL52	01021279
Class 1 Sound Level Meter ML2	Rion	NL52	011443567
Class 1 Sound Level Meter ML3 & ML4	B&K	2250	2827269
Calibrator 1	B&K	4231	2217877

A12.49 During calibration no significant deviation from the reference value was noted. Full calibration details are available upon request. The sound level meters were programmed to log a number of parameters including L_{Aeq}, L_{A90}, L_{A10} and L_{Amax} values, in 15-minute contiguous intervals at all of the monitoring locations.

Meteorological Conditions

A12.50 During attended periods night-time weather conditions on-site were observed as being relatively still and clear, with a temperature of 3°C. Traffic movements on the M606 and Bradford Road were significantly reduced compared to daytime flows although noise from the M606 remained dominant. Daytime conditions on-site were observed to comprise a north westerly wind with an average wind speed of 1.3 m/s and ambient temperatures were noted to be approximately 9°C.

A12.51 Meteorological conditions were within the limits specified in the relevant standards for acceptable sound measurements.

Limitations and Assumptions

A12.52 Paragraphs 12.57 to 12.60 of the July 2016 ES remain unchanged.

Baseline Conditions

A12.53 The following section supersedes Paragraphs 12.61 – 12.68 of the July 2016 ES.

A12.54 The Application Site is located on the Former Bierley Treatment Works, Cleckheaton. The M606 motorway is located to the west of the Application Site, and the M62 motorway is located to the south-east of the Application Site.

A12.55 The nearest NSRs are residential dwellings and schools along Bradford Road to the west of the Application Site, and along Mill Carr Hill Road/Cliff Hollins Lane to the north of the Application Site.

A12.56 During both attended surveys, the dominant source of noise affecting the Application Site was observed to be road traffic noise from the M606 motorway, as well as road traffic noise from the M62 and Junction 26 roundabout to the south of the Application Site. At the Bradford Road monitoring location (ML4), traffic comprised a mix of lorries, vans and cars. Traffic flows were intermittent due to the signalised M62 Junction 26 roundabout and traffic lights on the Oakenshaw junction. Additional noise sources included occasional aircraft flyovers.

A12.57 No noticeable levels of ambient ground borne vibration were observed on site during the site visits.

A12.58 A summary of the automated free-field ambient sound monitoring results are provided in Table A12.6. Sound level data at all locations are reported directly as measured for the given measurement period. Measurements undertaken during the period 07:00 and 23:00 hours are defined as daytime and measurements undertaken during the period 23:00 and 07:00 hours are defined as night-time by BS 8233.

Table A12.6: Summary of Sound Monitoring Results at ML1

Date	Time Period	$L_{Aeq,T}$ dB	Highest L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$dB
Friday 17th February	12:45 – 23:00	65.1	78.7	68.5	57.1
	23:00 – 07:00	58.4	75.9	63.0	48.5
Saturday 18th February	07:00 – 23:00	63.4	81.7	67.3	55.7
	23:00 – 07:00	60.0	78.7	65.1	47.8
Sunday 19th February	07:00 – 23:00	64.1	84.0	67.6	57.5
	23:00 – 07:00	61.7	76.1	67.5	47.8
Friday 10th March	15:00 – 23:00	63.7	80.8	69.2	57.8
	23:00 – 07:00	59.4	77.3	64.2	48.5
Saturday 11th March	07:00 – 23:00	63.7	85.0	66.9	58.9
	23:00 – 07:00	59.6	75.4	65.2	47.9
Sunday 12th March	07:00 – 23:00	63.9	82.6	67.2	58.5
	23:00 – 07:00	61.7	82.2	67.9	48.7
Monday 13th March	07:00 – 23:00	66.2	89.6	69.7	59.5
	23:00 – 07:00	61.8	76.4	68.4	47.2
Tuesday 14th March	07:00 – 23:00	66.7	82.5	69.9	58.6
	23:00 – 07:00	60.8	83.0	67.9	48.8
Wednesday 15th March	07:00 – 14:00	64.8	79.3	67.8	60.9

A12.59 Results of the attended monitoring undertaken at ML3 and ML4 are presented in Tables A12.7 and A12.8 below.

Table A12.7: Summary of Attended Sound Monitoring at ML3

Date	Time Period	$L_{Aeq,T}$ dB	Highest L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$dB
Tuesday 21st February 2017	00:00	58.9	78.1	61.0	52.2
	00:15	57.2	67.4	60.5	50.8
	00:30	56.9	78.2	59.1	50.6
	00:45	56.1	68.3	59.2	49.7
	13:15	61.2	80.1	61.8	57.7
	13:30	61.7	81.1	61.9	57.5
	13:45	62.4	85.4	61.9	56.9
	14:00	61.1	81.6	60.8	57.1
	14:15	62.5	86.8	61.7	57.7

Table A12.8: Summary of Attended Sound Monitoring at ML4

Date	Time Period	$L_{Aeq,T}$ dB	Highest L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$dB
Tuesday 21st February 2017	01:15	55.3	73.6	56.0	42.3
	01:30	48.6	64.2	51.0	43.2
	01:45	54.3	75.0	52.3	43.2
	02:00	52.0	68.6	53.7	43.4
	12:00	62.8	76.9	65.6	56.7
	12:15	62.0	74.5	65.1	56.6
	12:30	62.3	77.1	65.1	56.4
	12:45	62.6	75.3	65.2	57.5

Representative Sound Levels

A12.30 Based upon the weekday sound level data presented within the Tables A12.6 – A12.9 above as an intended conservative approach to assessment of road traffic noise, the following values presented within Table A12.9 will be used within the assessment section of this Addendum report.

Table A12.9 Summary of Representative Sound Levels

Receptor	Sound Level (dB)					
	$L_{Aeq,T}$		L_{Amax}		L_{A90} *	
	Day	Night	Day	Night	Day	Night
ML1	61	54	-	82	52	45
ML2	67	60	-	83	59	48

Bradford Road (ML3)	62	53	-	75	57	43
Cliff Hollins Lane (ML4)	62	57	-	78	57	51

* Noise levels have been derived based upon the lowest 10th percentile of all of the 15-minute measurements within the 16hr day or 8hr night-time period, as an intended conservative approach.

Predicted Significant Effects

Construction

A12.31 Construction related noise and vibration impacts have not been reassessed and can be found within the July 2016 ES, Paragraphs 12.69 – 12.83. However, the ABC method threshold values (Table 12.15 of the July 2016 ES) have been updated to reflect the new baseline ambient sound levels.

A12.32 Table 12.15 of the July 2016 ES has been replaced by Table A12.10 (below) to reflect the updated ambient sound level data. Using the updated daytime ambient sound levels, an ABC category has been defined for the two off-site NSRs.

Table A12.10: BS 5228-1 ABC Method Threshold Values (Daytime) [Ref 12.6]

Location	BS 5228-1 ABC Method Threshold Values			
	Average Measured Ambient Weekday Daytime Noise Level dB $L_{Aeq,1\text{-}hr}$	Ambient Noise Level L_{Aeq} Rounded to Nearest 5 dB	ABC Category	Threshold Value (dB)
Dwellings along Bradford Road	62	60	A	65
Dwellings along Mill Carr Hill Road/Cliff Hollins Lane	62	60	A	65

A12.33 In order to avoid significant noise effects during construction, construction noise levels should remain below the Threshold Values at NSRs. Where construction works are intended at night or during the weekend, appropriate Threshold Values will need to be established based upon baseline noise levels at NSRs.

Effects During Operational Phase: Long Term

A12.34 Redevelopment of the Application Site has the potential to impact existing NSRs, therefore consideration has been given to:

- noise from operational activities and deliveries associated with the proposed employment zone; and
- assessment of the effects of operational noise due to changes in road traffic, on existing NSRs in the vicinity of the Application Site.

Noise from Operational Site Activities (comprising HGV Movements and Reversing Alarms within the Employment Zone)

A12.35 Paragraphs 12.84 – 12.92 of the July 2016 ES have been retained with the exception of Paragraph 12.88, which has been replaced by the following.

A12.36 Site HGV activity has been calculated by assuming that there will be the number of daily OGV/HGV vehicles associated with the employment zone presented in Table A12.11. Site operation has been assumed to be 24-hours and HGV movements are assumed as a consistent flow throughout both daytime and night-time periods, as a potential conservative approach.

Table A12.11: Number of Predicted HGV 2-way Movements Related to the Employment Zone

Link	Number of Predicted Daily OGV/HGV Movements	Approximate Average per 1-hour Period	Approximate Average per 15-minute Period
Site Access	358	15	4

A12.37 For the purposes of this assessment OGV and HGV reversing alarm sound source data have been assumed to be equivalent. The distances used in the assessments relate to the distances between the NSRs and the potential closest point within the employment zone (as an assumed vehicle manoeuvring location).

A12.38 Tables 12.20 and 12.21 of the July 2016 ES are no longer required given the removal of the proposed residential development. Tables A12.12 to A12.14 below are duplicates of Tables 12.18, 12.19 and 12.22 presenting the BS 4142 assessment in the July 2016 ES, but have been updated to reflect the 2017 *background sound level* data. In the absence of detailed information at this stage related to the future employment zone operations, a +3 dB character correction has been applied for a distinguishable sound that is neither tonal nor impulsive. However, following removal of the residential element and redesign of the employment zone, screening between the closest service yard and NSRs at Cliff Hollins Lane will be provided by a proposed earth bund around the service yard. The design of the earth bund at this stage is unknown but the calculations for this assessment assume partial screening with a 5 dB reduction. A 5 dB reduction would typically be achieved where the sound source is just visible at the NSR above the bund or barrier.

Table A12.12: BS 4142 Assessment – Dwellings along Bradford Road (ML4)

Assessment Scenario	Number of HGVs/OGVs	Sound Power Level L_{wA} (dB)	Total time of operation (minutes)	Time correction (dB)	Distance to Receptor (m)	Distance / Propagation Correction (dB)*	Attenuation by Building Screening and Land Features (dB)	Sound character correction (dB)	Predicted *Rating level* at NSR (dB)	*Background sound level* (dB L_{A90})	Difference (dB)
1-hour period, daytime	15	99	60	0	120	-50	-5	+3	47	57	-10
15-minute period, night-time	4	99	20	-5	120	-50	-5	+3	42	43	-1

*Assumes Hemi-spherical propagation

Table A12.13: BS 4142 Assessment – Dwellings along Mill Carr Hill Road/Cliff Hollins Lane (ML3)

Assessment Scenario	Number of HGVs/OGVs	Sound Power Level L_{wA} (dB)	Total time of operation (minutes)	Time correction (dB)	Distance to Receptor (m)	Distance / Propagation Correction (dB)*	Attenuation by Building Screening and Land Features (dB)	Sound character correction (dB)	Predicted *Rating level* at NSR (dB)	*Background sound level* (dB L_{A90})	Difference (dB)
1-hour period, daytime	15	99	60	0	200	-54	-5	+3	43	52	-9
15-minute period, night-time	4	99	20	-5	200	-54	-5	+3	38	45	-7

*Assumes Hemi-spherical propagation

Table A12.14: L_{Amax} Noise Level Assessment (based upon the use of a vehicle reversing alarm within the Employment Zone)

NSR	Sound Power Level L_{wA} (dB)	Distance to Receptor (m)	Distance / Propagation Correction (dB)*	Attenuation by Building Screening and Land Features (dB)	Predicted maximum level at NSR (dB L_{Amax})	WHO criteria (dB L_{Amax})	Difference (dB)
Bradford Road	105	120	-50	-5	45	60	-10
Cliff Hollins Lane	105	200	-54	-5	41	60	-14

*Assumes Hemi-spherical propagation

A12.39 In summary, Tables A12.12 to A12.14 present the following with respect to BS 4142:2014 assessments of operational noise resulting from HGV manoeuvring within the proposed employment zone:

- At existing dwellings along Bradford Road, the predicted *rating level* is 10 dB below the measured *background sound level* during the daytime and 1 dB below the measured *background sound level* during the night-time.

- At existing dwellings along Mill Carr Hill Road/Cliff Hollins Lane, the predicted *rating level* is 9 dB below the measured *background sound level* during the daytime, and 7 dB below the measured *background sound level* during the night-time.

- Night-time L_{max} noise levels from HGV reversing alarms have been calculated to be 10 dB and 14 dB below the 60 dB criterion at the nearest residential properties on Bradford Road and Cliff Hollins Lane respectively.

A12.40 During daytime periods, *rating levels* resulting from HGV manoeuvring within the employment zone are predicted to be sufficiently below representative measured *background sound levels* at nearby NSRs such that there is a *'very low impact'* in accordance with BS 4142:2014 guidance. In accordance with Tables A12.1, A12.2 and A12.3 above, the predicted *rating levels* are equivalent to a Very Low magnitude of impact with a resulting Negligible significance of effect (not significant).

A12.41 During night-time periods, at NSR on Cliff Hollins Lane, *rating levels* resulting from HGV manoeuvring within the employment zone are predicted to be slightly above the measured *background sound level* at nearby NSRs such that there is a *'low impact'* in accordance with BS 4142:2014 guidance. In accordance with Tables A12.1, A12.2 and A12.3 above, the predicted Rating levels are equivalent to a Low magnitude of impact with a resulting Minor significance of effect (not significant).

A12.42 During the night-time periods, at NSR on Bradford Road, *rating levels* resulting from HGV manoeuvring within the employment zone are predicted to be below the measured *background sound level* such that there is a predicted *'very low impact'* in accordance with BS 4142:2014 guidance. In accordance with Tables A12.1, A12.2 and A12.3 above, the predicted Rating levels are equivalent to a Very Low magnitude of impact with a resulting Negligible significance of effect (not significant).

A12.43 In accordance with BS 4142:2014 the uncertainty within the assessment should be considered. Future *background sound levels* may vary from those measured due to the additional acoustic screening provided by buildings within the development. However, conversely, traffic levels on the surrounding road network (the dominant noise source in the area) may increase, and therefore increase the *background sound level*. Both of these factors could influence the BS 4142 assessment outcome.

A12.44 Supplementary to the above assessment, the Kirklees Council requirements state that the *rating level* should be 0 – 5 dB below the *background sound level* and 10 dB below the *ambient sound level* (L_{Aeq}). This is achieved at both of the off-site NSRs.

Building Services and Fixed Plant Noise

A12.45 Paragraphs 12.100 – 12.101, Building Services and Fixed Plant Noise, from the July 016 ES are replaced with the following:

A12.46 In order to achieve a minor adverse significance of effect (or lower) as set out in Table A12.5, the magnitude of impact (calculated in accordance with BS 4142:2014) is required to be no higher than 5dB above the *background sound level* (L_{A90}), as set out in Table A12.3, for a high sensitivity residential receptor.

A12.47 Table 12.23 of the July 2016 ES has been superseded by Table A12.15 below and presents updated operational noise limits at existing off-site NSR**.**

Table A12.15: Recommended Operational Noise Limits for Off-Site Receptors

Location	Operational Noise Limits (*Rating Level*, dB)	
	Daytime (07:00 – 23:00)	Night-time (23:00 – 07:00)
Dwellings along Bradford Road	62	48
Dwellings along Mill Carr Hill Road/Cliff Hollins Lane	62	56

A12.48 However, should there be a desire to reduce noise levels to achieve the Kirklees BS 4142 criteria of a *rating level* between 0-5 dB below the background sound level, the above operational limits would need to be adjusted downwards accordingly.

A12.49 There are no known significant operational vibration sources associated with the proposed development, therefore vibration impacts would be considered to be of Negligible significance at this stage (not significant).

Impact of Traffic Movements on Access Road to Employment Zone

A12.50 Traffic movements associated with the Proposed Development along the access road (from Cliff Hollins Lane), have the potential to result in a significant noise effect at existing NSRs at Cliff Hollins Lane.

A12.51 In Table A12.16 noise levels from the access road have been calculated using the Basic Noise Level (BNL) calculation method described in CRTN (Ref 12.7). The BNL has then been corrected to L_{Aeq} so that it can be used in the further assessment.

Table A12.16: Calculated BNL from Access Road using Traffic Data

Link Name	2017 Traffic 18hr AAWT	Number of HGV's	% HGV	Speed of Traffic (kph)	Resulting Basic Noise Level (L_{A10} dB)	Corrected to L_{Aeq}
Access Road	1388	358	25.6	32	62.8	60.8

A12.52 Using the noise levels derived from the traffic data, movements along the employment zone access road can be predicted at the existing residential NSRs on Cliff Hollins Lane. Table A12.17 presents the predicted impact in accordance with the BS 4142:2014 methodology. A +3 dB character correction has been applied for a distinguishable sound that is neither tonal nor impulsive.

Table A12.17: Prediction of Impact from HGV Movements along Employment Zone Access Road

Receptor	Time Period	Calculated Noise level from Access Road (L_{Aeq})	Distance from Access Road to NSR	Sound character correction (dB)	Predicted *rating level* at NSR (dB)	*Back-ground sound level* (dB L_{A90})	Difference (dB)
Cliff Hollins Lane	Daytime	61	50 m (14 dB)	3	49	52	-3
	Night-time			3	49	45	+4

A12.53 In summary, the predicted rating level is 3 dB below the measured representative background sound level during the daytime, and 4 dB above the measured representative background sound level during the night-time.

A12.54 During the daytime period, the *rating level* resulting from traffic on the access road to the employment zone is predicted to be equal to the measured *background sound level* at nearby NSRs such that there is a *'very low impact'* in accordance with BS 4142:2014 guidance. During the night-time, the *rating level* is predicted to be 4 dB above the measured representative *background sound levels* at nearby NSRs such that there is a *'low impact'* in accordance with BS 4142:2014 guidance.

A12.55 In accordance with Tables A12.1, A12.2 and A12.3 above, the predicted *rating level* during the daytime is equivalent to a Very Low magnitude of impact with a resulting Negligible significance of effect (not significant).

A12.56 During the night-time period, in accordance with Tables A12.1, A12.2 and A12.5 above, the predicted *rating level* is equivalent to a Low magnitude of impact with a resulting Minor significance of effect (not significant).

Operational Traffic Flows on the Local Highway Network

A12.57 Paragraphs 12.102 – 12.104, Operational Traffic Noise, from the July 2016 ES have been replaced with the following:

A12.58 Relative changes in 18-hour traffic noise levels along the local road network have been calculated using methodologies in line with CRTN guidance. This has been carried out for the 2017 'without' scheme scenario, 2017 'with' scheme scenario and 2022 'with' scheme scenario. The project transport consultants (AECOM) have provided updated road traffic data in the form of 18-hour Annual Averaged Weekly Traffic (AAWT) for each road link.

A12.59 The relative change in road traffic noise levels based on the overall increase in traffic volume have been assessed using the short term and long term criteria set out in Table 12.8 of the July 2016 ES. Tables A12.18 and A12.19 present the operational traffic noise assessment.

Table A12.18: Operational Traffic Noise Assessment – Short Term

Link Name	2017 Without Develop-ment 18hr AAWT / HGV %	2017 With Develop-ment 18hr AAWT / HGV %	Difference 18hr AAWT / HGV %	Relative change in road traffic noise level dB	Magnitude of Impact	Significance of Effect (High Sensitivity Receptors)
Cliff Hollins Lane (east)	2426 / 1.2	2468 / 1.7	42 / 0.5	+0.3	Very Low	Negligible
Cliff Hollins Lane (west)	2426 / 1.2	3772 / 10	1346 / 8.8	+4.5	Medium	Moderate
Mill Carr Hill Road (east)	3553 / 0.8	3595 / 1.1	42 / 0.3	+0.2	Very Low	Negligible
Mill Carr Hill Road (west)	5619 / 0.6	6924 / 5.4	1305 / 4.8	+2.6	Low	Minor
Bradford Road (north)	15343 / 1.8	15621 / 9.6	278 / 7.8	+2.9	Low	Minor
Bradford Road (south)	14570 / 6.6	15597 / 10.7	1027 / 4.1	+1.2	Low	Minor

Table A12.19: Operational Traffic Noise Assessment – Long Term

Link Name	2017 Without Develop-ment 18hr AAWT / HGV %	2022 With Develop-ment 18hr AAWT / HGV %	Difference 18hr AAWT / HGV %	Relative change in road traffic noise level dB	Magnitude of Impact	Significance of Effect (High Sensitivity Receptors)
Cliff Hollins Lane (east)	2426 / 1.2	2624 / 1.7	198 / 0.5	+0.5	Very Low	Negligible
Cliff Hollins Lane (west)	2426 / 1.2	3929 / 10	1503 / 8.8	+4.6	Low	Minor

Mill Carr Hill Road (east)	3553 / 0.8	3824 / 1.1	271 / 0.3	+0.5	Very Low	Negligible
Mill Carr Hill Road (west)	5619 / 0.6	7287 / 5.4	1668 / 4.8	+2.7	Very Low	Negligible
Bradford Road (north)	15343 / 1.8	16609 / 9.6	1266 / 7.8	+3.1	Low	Negligible
Bradford Road (south)	14570 / 6.6	16536 / 10.7	1966 / 4.1	+1.4	Very Low	Negligible

A12.60 Table 12.18 above shows that during the short-term, negligible or minor magnitudes of impact are expected due to changes in traffic flows for the majority of roads in the vicinity of the Application Site. This is with the exception of Cliff Hollins Lane (west), which has been predicted to experience a medium magnitude of impact. For the majority of roads this would result in effects of negligible or minor significance of effect (not significant), but for Cliff Hollins Lane (west) this would result in a moderate significance of effect. However, it should be noted that the change in noise level on Cliff Hollins Road (west) would only form part of the road traffic noise contribution at adjacent NSRs. When combined with the traffic noise contribution from the M606, the predicted noise level change at the worst affected NSR would be approximately 1dB on the northern façade, and approximately 2dB on the eastern facade. These change values are classified as a low magnitude of impact, and a resulting minor adverse significance of effect (not significant).

A12.61 Table 12.19 above shows that during the long-term, negligible or minor magnitudes of impact are expected due to changes in traffic flows for all of the roads in the vicinity of the Application Site, this would result in effects of negligible or minor significance (not significant).

A12.62 Therefore for all NSRs affected by a change in operational traffic noise the magnitude of the change will be > 3 dB (short-term) and > 5 dB (long-term), which are classed as low or very low and below the LOAEL. As a result, no further mitigation measures are considered necessary.

Car Parking

A12.63 There are no changes to paragraphs 12.105 to 12.115.

Summary of operational effects (no mitigation)

Table A12.20: Operational Effects (without Mitigation) Assessment Summary Table

Potential Impact	Impact Area	Phase	Period	Permanent/ Temporary	Significance
Operational Site Activities#	Local: Nearby NSRs e.g. residential dwelling	Operation	Long Term	Permanent	Minor/ Negligible
Building services and plant noise*	Local: Nearby NSRs e.g. residential dwelling	Operation	Long Term	Permanent	Negligible
Operational Traffic on Access Road	NSR on Cliff Hollins Lane	Operation	Long Term	Permanent	Negligible - Minor
Operational Traffic on public roads	Local: Nearby NSRs e.g. residential dwellings	Operation	Long Term	Permanent	Negligible - Minor

#on the basis that the bund is designed and constructed to achieve a minimum 5dB reduction in noise levels associated with service yard activities.

* On the basis that the operational noise limits are met.

Scope of Mitigation

Mitigation during the construction phase: short to medium term.

A12.64 Paragraphs 12.117 – 12.127 of the July 2016 ES have been retained.

Mitigation during Operational Phase: Long Term

Ambient Noise Affecting the Existing NSRs

A12.65 Paragraphs 12.128 to 12.135 are no longer required.

A12.66 The following sections discuss the mitigation and design measures which will help to minimise the potential adverse effects during the operational phase of the development.

Noise from Operational Site Activities

A12.67 By careful design and specification at the detailed design stage, it should be possible to achieve the BS 4142 criteria adopted for this assessment and achieve levels equal to or lower than the LOAEL. This can be achieved by consideration of the following:

- Where possible, appropriate layout of the employment zone structures such that the structures themselves provide screening of noise from vehicular traffic and manoeuvring within the employment zone

- Where the northernmost employment buildings cannot be oriented to provide screening of the service yards, appropriate design of the proposed earth bund located between the employment zone and NSR on Cliff Hollins Lane, such that HGV movements are barely visible from the NSR on Cliff Hollins Lane and a minimum of 5dB sound reduction is achieved against noise from the service yards.

- Regular maintenance of fixed and mobile plant using the employment site;

- Reverse alarms on mobile plant to use 'broadband noise' types where possible and set to a low level but satisfying the requirements for Health and Safety;

- Appropriate scheduling of deliveries and dispatches to minimise vehicle movements during the night time hours, as far as practicable; and

- Implementation and regular reviews of operational procedures to ensure that noise mitigating measures are maintained.

A12.68 Once the final end uses of the employment zone are confirmed noise management plans, and/or BS 4142 assessments can be prepared/undertaken to minimise the noise impacts associated with the operation of the employment zone.

Building Services and Fixed Plant Noise

A12.69 By careful design and specification at the detailed design stage, it should be possible to achieve the BS 4142 criteria adopted for this assessment and achieve levels below the SOAEL, where necessary by accommodating appropriate noise attenuation measures. For example, breakout noise from refrigeration plant contained within plant rooms can be reduced using acoustic ventilation louvres, noise from fans housed within ducted intakes and exhausts can be reduced using in-duct attenuators and noise from boiler flue fans can be reduced by atmospheric-side boiler flue attenuators. Significant noise reduction can also be achieved by careful positioning and screening of plant and building services away from NSRs. Hence, the appropriate design, location and installation of any fixed plant, and associated mitigation where necessary, such that the noise criteria are met, should ensure that significant adverse impacts will not arise. Achieving *rating levels* of no greater than 5 dB above the prevailing *background sound levels* would result in levels equal to the LOAEL set for this assessment.

Traffic Movements on Access Road to Employment Zone

A12.70 Employment zone access road noise calculations and subsequent BS 4142 assessment presented within Table A12.18 indicated effects of minor adverse significance (not significant) during the night-time period at existing residential NSRs along Cliff Hollins Lane.

A12.71 However, should Kirklees Council require a criterion *rating level* between 0 – 5 dB below *background sound level (*WYPGC guidelines), a minimum reduction of 4dB would be required. In order to achieve this reduction an acoustic barrier between the existing NSRs on Cliff Hollins Lane and the employment zone access road should be considered. The height and length of the barrier should be such that the NSRs are adequately protected and acceptable night-time noise levels are achieved.

A12.72 A reduction of more than 4 dB should be readily achievable at the existing NSRs through the incorporation of an acoustic barrier. Based upon a barrier positioned 2m from the kerb edge, an acoustic barrier with a height of 2.5 m installed along the first 80 metres on the western side of the access road (closest to Cliff Hollins Lane) should achieve an approximate noise reduction of 4dB at the worst affected NSR. This would reduce the *rating level* so that it is equal to the *background sound level* and meet with the WYPCG criterion.

Residual Effects Assessment

Residual Effects During Construction Phase: Short to medium Term

A12.73 Paragraph 12.141 of the July 2016 ES is retained.

Residual Effects during Operational Phase: Long Term

Ambient Noise and Vibration affecting the Residential Zone

A12.74 Paragraph 12.142 to 12.143 of July 2016 ES is on longer required.

Noise from Operational Site Activities

A12.75 Paragraph 12.144 of the July 2016 ES is replaced with the following:

A12.76 HGV movements and reversing within the employment zone service yard areas are predicted to be limited to an effect of negligible significance based upon the assessment undertaken. Appropriate criteria have been provided in order to ensure any effect is minimised.

Building Services and Fixed Plant Noise

A12.77 Paragraph 12.145 of the July 2016 ES is retained

Impact of HGV Movements on Access Road to Employment Zone

A12.78 Without mitigation in place, for the daytime period, noise from HGV movements along the access road has been predicted to have an effect of negligible/minor adverse significance. If HGV deliveries are required to operate throughout the night-time period operational activities may result in a minor adverse significance at existing NSRs on Cliff Hollins Lane. However, should Kirklees council criterion of a *rating level* 0 – 5 dB below *background sound level*, the implementation of appropriate mitigation would reduce the significance of effect to negligible/minor adverse at nearby NSRs.

Operational Traffic and Car Park Noise

A12.79 Paragraph 12.146 of the July 2016 ES is retained.

Summary of residual effects

A12.80 **Table A12.21** summarises the potential impacts, mitigation measures, residual effects and significance of effects on receptors as a result of the Proposed Development.

Table A12.21: Summary of Residual Effects

Potential Impact	Impact Area	Phase	Significance of Effects without Mitigation	Mitigation	Period	Permanent/ Temporary	Residual Significance of Effects with Mitigation
Operational Site Activities	Local: Nearby NSRs e.g. residential	Operation	Minor/Negligible Adverse (Below LOAEL)	Non additional - Earth bund already incorporated into design (minimum sound reduction performance required)	Long Term	Permanent	Minor/Negligible Adverse (Below LOAEL)
Building services and plant noise	Local: Nearby NSRs e.g. residential dwelling	Operation	Negligible	Plant noise limits set based on existing background noise levels and Kirklees Council criteria	Long Term	Permanent	Negligible (Below LOAEL)
Operational Traffic on Access Road	Cliff Hollins Lane	Operation	Minor/Negligible Adverse (Below LOAEL)	Barrier along western side of access road	Long Term	Permanent	Negligible (Below LOAEL)
Changes in future road traffic noise (Short-term)	Cliff Hollins Lane (west)	Operation	Minor/Negligible Adverse (Below LOAEL)	none	Short Term	Permanent	Minor/ Negligible Adverse (Below LOAEL)
Changes in future road traffic noise (Long-term)	Local: Nearby NSRs e.g. residential dwellings	Operation	Minor/Negligible Adverse (Below LOAEL)	none	Long Term	Permanent	Minor/ Negligible Adverse (Below LOAEL)

Cumulative Effect Assessment

A12.81 Paragraphs 12.150 – 12.155 from the July 2-16 ES chapter have been retained.

References

A12.1 Department for Environment, Food & Rural Affairs (2010), Noise Policy Statement for England (NPSE)

A12.2 West Yorkshire Combined Authority (2002). West Yorkshire Planning Consultation Guidance.

A12.3 Kirklees Council (2016), Publication Draft Local Plan: Strategy & Policies

A12.4 Bradford Metropolitan District Council (2017), Bradford Core Strategy

A12.5 British Standards Institute (2014), BS 4142:2014 – Methods for Rating and Assessing Industrial and Commercial Sound.

A12.6 British Standards Institute (2014), BS 5228-1:2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites. Part 1: Noise.

A12.7 Department of Transport/Welsh Office (1998), Calculation of Road Traffic Noise (CRTN)

A13. Air Quality

Purpose of the assessment: Introduction

A13.1 This Chapter has been prepared to support the revised development proposal (September 2017) prepared for the site formerly known as the North Bierley Waste Water Treatment Works. The Scheme 2 development comprises B2/B8 employment within the Kirklees Council (KMBC) authority area. The developmental parameters of the scheme are shown in **Chapters A1 and A4** and **Technical Appendices A1.2**.

A13.2 The assessment in July 2016 (and supporting Technical Appendix 13.0) is no longer valid and is replaced in its entirety by this new assessment and supporting ESA **Addendum Technical Appendix A13.0**.

A13.3 The July 2016 ES considered the potential significant environmental effects of a mixed use scheme – residential and B2/B8 employment. The consultation process found no specific objections with respect to air quality mentioned in the North Bierley consultation response dated 29th November 2016.

A13.4 This Chapter assesses the likely significant impacts of the Proposed Development as set out in Chapter A4 with respect to air quality. It describes the methods used to assess the impacts; the baseline conditions currently experienced at the application site and in the surrounding area; likely future conditions; the mitigation measures required to prevent, reduce or offset adverse effects; and the likely residual effects after these measures have been adopted.

A13.5 During demolition and construction works potential impacts will be associated mainly with dust emissions. Potential operational impacts will be associated with increased traffic emissions associated with the proposed development.

A13.6 This Chapter has been prepared by AECOM and is accompanied by **Addendum Technical Appendix A13.0**

Legislative framework, policy and guidance

National and European Air Quality Legislation and Policy

Local Air Quality Management

A13.7 The provisions of Part IV of the Environment Act 1995 establish a national framework for air quality management, which requires all Local Authorities to conduct local air quality reviews. Section 82(1) of the Act requires these reviews to include an assessment of the current air quality in the area and the predicted air quality in future years. Should the reviews indicate that the objectives prescribed in the UK Air Quality Strategy (AQS) (Defra, 2007) [Ref A13.8] and the Air Quality Standards Regulations 2010 (Defra, 2010) [Ref A13.10] (henceforth referred to as the "Air Quality Regulations") will not be met, the Local Authority is required to designate an Air Quality Management Area (AQMA). Action must then be taken at a local level to ensure that air quality in the area improves.

A13.8 The UK AQS (AQS) (Defra, 2007) (RefA13.8) identifies nine ambient air pollutants that have the potential to cause harm to human health. These pollutants are associated with local air quality problems, with the exception of ozone, which is instead considered to be a regional problem. Similarly, the Air Quality Regulations set objectives, but for just seven of the pollutants that are associated with local air quality. These objectives aim to reduce the health effects of the pollutants to negligible levels.

European Air Quality Directives

A13.9 The air quality objectives and limit values currently applicable to the UK can be split into two groups. Each has a different legal status and is therefore handled differently within the framework of UK air quality policy. These are:

- UK air quality objectives set down in regulations for the purposes of local air quality management; and
- European Union (EU) limit values transcribed into UK legislation for which compliance is mandatory.

Air Quality Criteria

A13.10 The Air Quality Framework Directive (96/62/EC) (Ref A13.2) on ambient air quality assessment and management defines the policy framework for 12 air pollutants known to have a harmful effect on human health and the environment. Ambient concentration limit values for the specific pollutants are set through a series of Daughter Directives.

A13.11 Following the Daughter Directives, Council Directive 2008/50/EC (Ref. A13.7) on ambient air quality and cleaner air for Europe came into force in 2008, and was transposed into national legislation in 2010 (The Air Quality Standards Regulations 2010 (Defra, 2010)) (Ref A13.10). It consolidated existing air quality legislation and made provisions for Member States to postpone limit value attainment deadlines and allow an exemption from the obligation to limit values for certain pollutants, subject to strict conditions and assessment by the European Commission (EC).

Air Quality Criteria

A13.12 The pollutants of concern for this assessment are NO_2 and PM_{10}. The Government's Air Quality Strategy objectives and EU limit values for NO_2 are:

- an annual mean concentration of 40 µg/m^3; and
- a one-hour mean concentration of 200 µg/m^3, not to be exceeded more than eighteen times per year

A13.13 The Government's Air Quality Strategy objectives and the EU limit value for PM_{10} are:

- an annual mean concentration of 40 µg/m^3 (gravimetric); and

- a 24-hour mean concentration of 50 µg/m^3 (gravimetric) to be exceeded no more than 35 times per year.

Construction Dust

A13.14 Dust is defined as all particulate matter up to 75 µm in diameter and comprising both suspended and deposited dust, whereas PM_{10} is a mass fraction of airborne particles of diameter of 10 µm or less. The health effects associated with dust include eye, nose and throat irritation in addition to the nuisance caused by deposition on cars, windows and property. Dust and PM_{10} emissions arise from a number of sources, so demolition and construction activities and emissions from vehicles associated with the development should be considered.

Planning Policy

National Planning Policy Framework

A13.15 The following National Planning Policy Framework (NPPF)(Ref A13.14) paragraphs / policies are considered relevant to this assessment:

"Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan."

A13.16 The NPPF was supplemented by Planning Practice Guidance (RefA13.14) in March 2014. The guidance about air quality states:

"Whether or not 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 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)."

"When deciding whether air quality is relevant to a planning application, 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. This could be 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.
Affect biodiversity. In particular, is it likely to result in deposition or concentration of pollutants that significantly affect a European-designated wildlife site, and is not directly connected with or necessary to the management of the site, or does it otherwise affect biodiversity, particularly designated wildlife sites."

A13.17 The Air Quality Planning Practice Guidance also indicates that with regard to the development management process, should a development (following mitigation) lead to an unacceptable risk from air pollution, prevent sustained compliance with EU limit values or national objectives for pollutants or fail to comply with the requirements of the Habitats Regulations, then consideration should be given to how the proposal could be amended to make it acceptable, or where not practicable, to whether planning permission should be refused.

A13.17 With respect to dust emissions, the NPPF states that:

"The National Planning Policy Framework makes it clear that unavoidable dust emissions are controlled, mitigated or removed at source. A dust assessment study should be undertaken…"

Local planning policy

A13.18 KMBC is currently in the process of developing its new Local Plan. Policies from their Unitary Development Plan (1999) (Ref A13.33) as saved, relating to air quality include policy T1;

"Priority will be given to:

(i) satisfying the needs of all sections of the community through an effectively integrated transport system with emphasis on improving public transport and encouraging a modal shift away from travel by private car;

(ii) promoting a transport network on which it is safe to travel and which causes minimal disturbance through danger, noise and air pollution"

A13.19 The Transport Strategy 2040 (Ref A13.26) developed by the West Yorkshire Combined Authority (WYCA) and the West Yorkshire District Councils of Bradford, Calderdale, Kirklees, Leeds and Wakefield includes specific air quality considerations for Kirklees;

- *"Having f*requent, reliable and cost effective bus services is also a key local aim making the most of investment in ticketing improvements and hybrid/electric buses for air qu*ality improvements".*

- Under Protect and enhance Green Infrastructure and the Built Environment;

- "Consideration must be given to the potential impact, protection and mitigation of air quality at all stages of delivering transport projects"

- Under Create more accessible people friendly local centres and neighbourhoods;

  - "We will wherever possible seek to mitigate the impacts that major transport corridors have on communities, to reduce the severance, noise and poor air quality that can affect people's quality of life."

- In terms of how the Transport Strategy fits with the Strategic Economic Plan (Priority number 4 – Infrastructure for Growth). Transport Strategy Core Themes: Places to live and work

  - "Improved air quality must always be a key consideration"

A13.20 Bradford Metropolitan District Council adopted its Core Strategy in August 2017 [Ref 13.27] The Core Strategy

- Sets out the broad aims and objectives for sustainable development within the Bradford District for the next 15 to 20 years until 2030.

- Sets out broad policies for guiding and restraining development.

- Sets out the broad locations for new housing, employment and infrastructure investment.

- Take account of national and regional planning policy along with the Community Strategy.

- Does not allocate specific sites for new housing and employment development.

A13.21 Of specific interest to this application is under Section 5.4 Planning for Places - Environment;

> *"Air quality and health within the District has improved in line with both National Air Quality Standards and indicators and the principles of best practice. Through a range of actions, a reduction in emissions from sources which contribute to poor air quality has been secured. An improvement in the health of the District's population".*
>
> The fraction of mortality attributable to particulate air pollution over each monitoring period (IND15 (EV)).
> A reduction in exposure to particulate air pollution, resulting in a reduction in the fraction of mortality attributable to air pollution over each monitoring period (IND15 (EV)).

A13.22 Under Environmental Protection (Section 5.4.159) the strategic policies and proposals for determining the broad locations for development set out in this document have the potential to affect the quality of land, air and water within the District. As a consequence

of this, impacts could also affect public health and quality of life. Where development may have a potential impact on the quality of land, air and water, either directly or indirectly, particularly where there may be an impact on health, this is considered to be a material planning consideration.

A13.23 Kirklees Council and Bradford Council are both part of the West Yorkshire Low Emissions Strategy Group (WYLES). This air quality assessment has been undertaken in accordance with the draft West Yorkshire Air Quality and Emissions Technical Planning Guidance (WYLEG, 2014) (RefA13.24) as prepared by WYLES. The guidance document forms part of an overarching Low Emissions Strategy and provides a template for integrating air quality considerations into land-use planning and development management policies that can influence the reduction of road transport emissions in West Yorkshire. It is aimed at helping regional authorities deliver national air quality objectives through cost effective service planning, brought about by the joint working and individual mandates adopted as part of each authority's policy.

Assessment Methodology

A13.24 The potential for air quality impacts have been assessed for two distinct phases:

- The 'construction' phase (including demolition works): during which the greatest impact is expected to be from dust; and
- The 'operational' phase: when the impacts will be primarily associated with vehicle emissions.

Construction Phase Methodology

A13.25 In accordance with the draft West Yorkshire Air Quality and Emissions Technical Planning Guidance (WYLEG, 2014) (RefA13.24), the impacts associated with the construction phase of the proposed development have been qualitatively assessed with reference to the IAQM published 'Guidance on the assessment of dust from demolition and construction' (IAQM, 2014) (RefA13.19).

- According to the IAQM, the main air quality impacts that may arise during demolition and construction activities are:
- Dust deposition, resulting in the soiling of surfaces;
- Visible dust plumes, which are evidence of dust emissions;
- Elevated PM_{10} concentrations, as a result of dust generating activities on site; and
- An increase in concentration of airborne particles and NO_2 due to exhaust emissions from diesel powered vehicles and equipment on site and vehicles accessing the site.

A13.26 Activities on construction sites are classified into four types to reflect their different potential impacts:

- Demolition;
- Earthworks;
- Construction; and
- Track-out (The transportation of dust and dirt from the construction site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network).
- The steps followed to determine the risk of impacts, appropriate mitigation measures to be adopted, and significance of residual impacts are as defined by the IAQM and included in **Addendum Technical Appendix A13.0**.

Operational Phase Methodology

- The operational phase assessment follows the methodology outlined in the draft West Yorkshire Air Quality and Emissions Technical Planning Guidance (WYLEG, 2014). In addition, the Environmental Protection UK and Institute of Air Quality Management, 'Land-use planning and development control: planning for air quality' (May 2015) (RefA13.17) was also followed to determine the magnitude and significance of the impacts

Stage 1: Development Type Classification

A13.27 Developments should be classified as minor, medium or major based on the Department for Transport (DfT) threshold criteria for Transport Assessments and Travel Plans and anticipated changes in traffic associated with the development (**Table A13.1**).

Table A13.1: Development Classification

Development Classification	Criteria
Minor	Development proposals that do not meet the requirement for a Transport Assessment
Medium	Development proposals that meet the requirements for a Transport Assessment
Major	Development proposal that meet the requirements for a Transport Assessment and where one or more of the following is true: Where the proposed development falls within the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011 and includes air quality and/or transport as a specific likely impact. Proposals located within an Air Quality Management Area (AQMA).

	Proposals that could increase the existing traffic flow on roads of > 10,000 AADT by 5% or more. Proposals that increase traffic 5% on road canyons with >5,000AADT. Proposals that could introduce or significantly alter congestion (DfT Congestion) and includes the introduction of substantial road infrastructure changes. Proposals that reduce average speeds by more than 10km/h Proposals that include additional HGV movements by more than 10% of total trips. Where significant demolition and construction works are proposed.

Requirement for Transport Assessments and Travel Plans

A13.28 According to the DfT (DfT, 2015b) (Ref A13.16), a Transport Assessment and Travel Plan would be required if the proposed development meets the criteria shown in **Table A13.2**. The proposed scheme comprises of B2/B8 units, covering an area of up to 35, 284 sqm.

Table A13.2: DfT Criteria for Transport Assessments and Travel Plans

Land Use	Description	Transport Assessment Required
General Industrial (B2)	General industry (other than B1)	>4000 m^2
Storage or Distribution (B8)	Storage or distribution centres – wholesale warehouses, distribution centres & repositories	>5000 m^2

Traffic Data

A13.29 Data were supplied by the AECOM Transportation, the project transportation consultants, in the form of AADT flows and percentage HGVs for the future year with and without the development in place (2022). Year 2017 AADT for the M606 mainline flow was extracted from the Highways England WebTRIS online database, an appropriate growth factor was then applied to represent 2022 AADT (using a TEMPro NTM[7] daily growth factor).

A13.30 The traffic forecast based on year 2017 and implementation year 2022 estimated that 1,388 vehicles per day would be associated with the proposed development. All vehicles are anticipated to gain access to and from the site from Cliff Hollins Lane, west of the proposed site access, after which, the majority of vehicles turn left onto Mill Carr Hill Road. At the junction of Mill Carr Hill Road and Bradford Road, the majority of

[7] https://www.gov.uk/government/publications/tempro-downloads

development vehicles are anticipated to turn left to gain access to the M62 and the wider road network than towards Oakenshaw.

A13.31 With reference to the criteria shown in **Table A13.1**, a proposal is considered to be 'Major' if the development is anticipated to result in an increase of 5% on roads of > 10,000 AADT flows. Bradford Road south of Mill Carr Hill Road is the only road which meets this criterion.

A13.32 Similarly, a proposal is considered to be 'Major' if the development results in additional HGV movements of more than 10% of total movements. According to the traffic data for the proposed Scheme approximately 26% of the development flow will be HGVs, which equates to approximately 358 additional HGV movements per day on the local road network.

A13.33 Speed data for all roads was based on national speed limits and represent the average speed in any given hour. Emission factors for each selected speed therefore accounts for the transient behaviour of vehicles such as slower speeds at junctions and roundabouts.

A13.34 As part of the proposed development there is provision of a car park for Woodlands Church of England Primary School. The car park is considered to be small, with approximately 36 spaces and an area <2000m^2. Traffic flows are likely to be insignificant in comparison to local flows; therefore the car park has been scoped out of this assessment.

A13.35 The data used in the modelling assessment and the corresponding roads are shown in **Addendum Technical Appendix A13.0**.

A13.36 With reference to the criteria in **Table A13.1** and taking the traffic flows into consideration, the proposed development was considered to be 'Major'.

Stage 2: Air Quality Impact Assessment

Major Classified Proposals

A13.37 According to the draft West Yorkshire Air Quality and Emissions Technical Planning Guidance (WYLEG, 2014) [Ref A13.24], the scale and nature of a 'Major' development is such that a formal air quality assessment will be required to determine that impact on public health and the local environment. The air quality assessment should clearly establish the likely change in pollutant concentrations at relevant receptors resulting from the proposed development.

Scenarios

A13.38 The local air quality assessment was undertaken using ADMS Roads Version 4 detailed dispersion modelling software to predict concentrations of the road transport derived pollutants, NO_2, PM_{10} and $PM_{2.5}$ at selected existing sensitive receptors. The assessment of was undertaken for the following scenario:

- Base year, 2017;

- 2022 DM (DM, Do-Minimum), without the proposed development; and
- 2022 DS (DS, Do-Something), with the proposed development.

A13.39 The draft West Yorkshire Air Quality and Emissions Technical Planning Guidance (WYLEG, 2014) (RefA13.24) states that in addition to the above scenarios, a sensitivity test should be undertaken which assumes that there will be no reduction in traffic related emission factors from the base year to the future year. Our approach is confirmed in the following paragraphs.

Dispersion Modelling and Road Traffic Emissions

A13.40 This assessment has used the latest version of dispersion model software 'ADMS-Roads' (v4.0.1.0) to quantify pollution levels at selected receptors. ADMS-Roads is a modern dispersion model that has an extensive published track record of use in the UK for the assessment of local air quality impacts, including model validation and verification studies (CERC, 2015) (A13.28)

A13.41 The emission factors applied to the dispersion model were derived from the UK Emission Factor Toolkit v7.0. However, due to the uncertainty in the rate of year on year improvements in vehicle emissions technology, the assumption has been made that there are no improvements in vehicle emissions between the current year (2017) and the opening year of 2022. In other words, the vehicle fleet composition with respect to emission standards remains unchanged.

Conversion of NO_X to NO_2

A13.42 The proportion of NO_2 in NO_X varies greatly with location and time according to a number of factors including the amount of oxidant available and the distance from the emission source. NO_X concentrations are expected to decline in future years due to falling emissions, therefore NO_2 concentrations will not be limited as much by ozone and consequently it is likely that the NO_2/NO_X ratio will in the future increase. In addition, a trend has been noted in recent years whereby roadside NO_2 concentrations have been increasing at certain roadside monitoring sites, despite emissions of NO_X falling. The 'direct NO_2' phenomenon is having an increasingly marked effect at many urban locations throughout the UK and must be considered when undertaking modelling studies.

In this study modelled NO_X values were converted to NO_2 using version 5.1 of the 'NO_X to NO_2' calculator, released in June 2016, and available online at http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html#NOxNO2calc (accessed October 2017) (RefA13.13). The year and region for which the modelling has been undertaken are specified and local factors, such as an appropriate factor of NO_X emitted as NO_2, are used in the calculation. The road type used was 'All UK traffic'.

Receptors

A13.43 Air quality receptors susceptible to changes in air quality typically include residential properties, schools, care homes, hospitals and designated ecological sites.

A13.44 Ten existing receptors were selected at which pollutant concentrations were modelled for the Scheme scenario described in paragraph 0. Receptors are presented in Figure A1 in **Addendum Technical Appendix A13.0** and in **Table A13.3**. The receptors were selected as those anticipated to experience the largest impacts based on the traffic data provided and include receptors located adjacent to Bradford Road, to the west of the M606, where the existing traffic flows are >10,000 and the development is anticipated to result in a change in AADT of >5%.

A13.45 No ecological receptors of concern with regards air quality were located near to the proposed site.

Table A13.3: Modelled Receptors

ID	Location	X	Y
1	Cliff Hollins Lane east	417630	427813
2	Cliff Hollins Lane west	417592	427804
3	Woodlands Primary School	417540	427966
4	Wyke Lane	417437	427815
5	Bradford Road, north of Mill Carr Road	417423	427852
6	Bradford Road, opposite Cross Street	417328	427896
7	Bradford Road, opposite St Andrew's Crescent	417527	427697
8	Bradford Road, south	417817	427129
9	Bradford Road, centre	417711	427294
10	Bradford Road, north	417622	427468

Meteorological Data

A13.46 The meteorological dataset used in the assessment was recorded at the Church Fenton meteorological station, which is approximately 25 km to the east of the site. This site is considered to be representative of regional meteorological conditions and sufficient to satisfy the requirements of this assessment.

Model Verification

A13.47 When using modelling techniques to predict concentrations, it is necessary to make a comparison between the modelling results and the monitoring data, to ensure that the model is performing in line with observed data. The accuracy of the future year modelling results are relative to the accuracy of the base year results, therefore greater confidence can be placed in the future year concentrations if good agreement is found for the base year.

A13.48 Kirklees Council operates an extensive network of automatic and passive monitoring techniques. Two sites (RS2 and DT41) are located on Bradford Road, south of Junction 26 (see **Addendum Technical Appendix A13.0**, Figure A3). However, due to the

complex nature of Junction 26, consisting of several slip roads onto and off of the M606 and M62, each at varying heights, it was not considered appropriate to use the monitoring data to generate a verification factor, particularly considering the locations of the modelled receptors.

A13.49 It was decided rather than relying on applying an arbitrary factor taken from other assessments the approach instead applied very conservative assumptions. (i.e. emissions rates which account for a limited improvement in vehicle emission standards up to 2022. In addition, hourly emissions rates considered to be constant over the 24 hour period).

Damage Costs

A13.50 The environmental damage cost associated with the development, due to traffic emissions' health and environmental impacts, was required to be estimated by the draft West Yorkshire Air Quality and Emissions Technical Planning Guidance (WYLEG, 2014) (RefA13.24). The guidance stipulates that the damage cost should help determine the amount (value) of mitigation that is expected to be spent on measures to reduce the impacts. The calculation utilises the Defra Emissions Factor Toolkit (Ref A13.11) to estimate the additional pollutant emissions from a proposed development and the Inter Government Department on Costs and Benefits (IGCB) Air Quality Damage Costs (Defra, 2015b) (RefA13.12) for the specific pollutant of interest, to calculate the resultant damage costs. The following calculation was used to determine the damage cost of the proposed development over a five year period for the pollutants NO_X and PM.

A13.51 Road Transport Emission Increase = Σ (Estimated trip rate for 5 years X Pollutant emission rate per 10 km per vehicle type X Damage Cost)

Stage 3: Mitigation and Compensation

A13.52 The outcome of Stage 2 identifies the damage cost of air emissions impacts associated with the development. Suggested mitigation measures are provided in the draft West Yorkshire Air Quality and Emissions Technical Planning Guidance (WYLEG, 2014) (RefA13.24).

Study Area

A13.53 The Site is located at the North Bierley decommissioned Wastewater Treatment Works and surrounding land located to the north of Junction 26 of the M62 and its intersection with the M606. The site is bounded by the M606 to the west, M62 to the south, Hanging Wood to the east and Cliff Hollins Lane to the north. A Location Plan can be found included in Chapter 1 of the ES. The area within 500 m of the Site could be affected by the Proposed Development so this area has been identified as the study area for local air quality. No designated ecological sites have been identified within 500 m of the site, therefore there are no ecological receptors which need to be considered as part of this assessment. Whilst Hanging Wood is a Kirklees Site of Wildlife Significance (SWS), SWS, in accordance with relevant guidance (IAQM, 2014 (Ref A13.19); IAQM, 2015 (RefA13.17), and WYLEG, 2014 (RefA13.24)) do not require consideration in terms of local air quality effects.

A13.54 **Addendum Technical Appendix A13.0**, Figure A1 shows the site location in the context of the surrounding road network.

Surveys / Method of Baseline Data Collation

Desk Study

A13.55 Local Air Quality Management (LAQM) reports and information provided by KMBC has been reviewed to summarise the baseline situation.

Site Visit / Other Assessment

A13.56 No monitoring surveys were carried out for this assessment.

Consultation Undertaken to Date

A13.57 Our approach has been consistent with what was agreed and done last time around, and consistent with West Yorkshire Air Quality and Emissions Technical Planning Guidance.

Significance Criteria

A13.58 Air quality impacts may be considered to be significant if a development leads to statistically impacting air quality criteria at existing sensitive receptors or if air quality objectives / EU limit values are predicted to be exceeded at proposed sensitive receptors. Updated guidance published by Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) on land-use planning and development control (Ref.A13.17) suggests that a two-stage approach should be adopted to determine whether or not a proposed development will have a significant impact on local air quality. Firstly, qualitative descriptions are applied to the predicted impacts on local air quality at individual receptors, which is then followed by a professional judgement on the overall significance of the effects of any identified impacts. These two stages are described in more detail in the following sections

Long-Term Impact Descriptors

A13.59 In order to assess the potential impacts of a proposed development on local air quality EPUK and IAQM suggest assigning a description of the impact based on the magnitude of change as a percentage of a relevant Air Quality Assessment Level (AQAL). Account also needs to be taken of predicted pollutant concentrations and their relationship to the AQAL. In most assessments the AQAL will correspond to the Air Quality Objective / EU Limit Value for the pollutant(s) of concern summarises the impact descriptors derived from the guidance for annual mean NO_2 and PM_{10} concentrations.

A13.60 Whilst the impact descriptors presented in the guidance are based on annual mean concentrations and changes in concentrations relative to the Air Quality Assessment Level, as a percentage, annual mean concentrations and changes in concentrations on a mass basis have been added to **Table A13.4** for ease of reference. It should be noted that the impact descriptors may be adverse or beneficial depending upon whether concentrations are predicted to increase or decrease.

Table A13.4: Air Quality Impact Descriptors for Sensitive Receptors (Annual Mean Concentrations)

Annual Mean Concentration at Receptor in Assessment Year		% Change in Concentration Relative to AQAL				
		0	1	2 – 5	6 – 10	>10
As % of AQAL	NO_2 / PM_{10} ($\mu g/m^3$) [a]	≤0.2	0.2 – 0.6	0.6 – 2.2	2.2 – ≤4.0	>4.0
≤75%	≤30.2	Negligible	Negligible	Negligible	Minor	Moderate
76% - 94%	30.2 – 37.8	Negligible	Negligible	Minor	Moderate	Moderate
95% - 102%	37.8 – 41.0	Negligible	Minor	Moderate	Moderate	Substantial
103% - 109%	41.0 – 43.8	Negligible	Moderate	Moderate	Substantial	Substantial
≥110%	≥43.8	Negligible	Moderate	Substantial	Substantial	Substantial

Notes:

AQAL = Air Quality Assessment Level, which will usually be an Air Quality Objective or EU Limit Value (e.g. for NO_2 / PM_{10} the relevant AQAL is the annual mean air quality objective / EU Limit Value of 40 $\mu g/m^3$).

[a] The values below and to the right represent the concentrations proposed by the IAQM for assessment purposes with regard the annual mean NO_2 and PM_{10} objective / EU Limit Value of 40 $\mu g/m^3$.

Short-Term Impact Descriptors

A13.61 The EPUK and IAQM guidance indicates that changes in short-term (i.e. hourly or less) concentrations of less than 10% of the relevant AQAL are sufficiently small in magnitude to be regarded as having an insignificant effect. Furthermore, where such peak short term concentrations are in the range 10-20% of the relevant AQAL, EPUK and IAQM indicates this impact can be described as slight, those in the range 20-50% moderate and those above 50% as substantial. It should be noted that these impacts descriptors are applied without reference to background or baseline concentrations in the study area.

A13.62

Table A13.5 summarises the impact descriptors derived from the guidance for hourly mean NO_2 concentrations expressed as the 99.8th percentile.

Table A13.5: Air Quality Impact Descriptors for Sensitive Receptors (Hourly Mean Concentration)

Proposed Criteria as % of AQAL	Predicted 99.8th Percentile Hourly Mean NO_2 Process Contribution	Impact Descriptor
<10%	< 20 µg/m^3	Negligible
10 – 20%	20 – 40 µg/m^3	Minor
20 – 50%	40 – 100 µg/m^3	Moderate
>50%	> 100 µg/m^3	Substantial

Assessment of Significance

A13.63 The descriptors presented in **Table A13.4** and

Table A13.5 are ascribed to impacts likely to be experienced at individual sensitive receptor locations, however they are not, of themselves, a clear and unambiguous guide to reaching a conclusion on significance. The EPUK / IAQM guidance makes it clear that the assessment of significance of the overall effect should be based on professional judgement. Whilst it may be that there are 'minor', 'moderate' or 'substantial' impacts at one or more receptors, the overall effect may not necessarily therefore be judged as being significant in some circumstances. Impacts may also be adverse, beneficial or negligible.

A13.64 One of the relevant factors in the judgement of the overall significance of effect may relate to the potential for cumulative impacts, especially where it is proving difficult to reduce concentrations of a pollutant. Conversely, a 'moderate' or 'substantial' impact may not have a significant effect if it is confined to a very small area.

A13.65 Where a single development can be judged in isolation, it is likely that a 'moderate' or 'substantial' impact will give rise to a significant effect and a 'negligible' or 'minor' impact will not have a significant effect, but such judgements are always more likely to be valid at the two extremes of impact severity.

A13.66 Any judgement on the overall significance of effect of a development will need to take into account such factors as:

- the existing and future air quality in the absence of the development;
- the extent of current and future population exposure to the impacts;
- the overall balance between the number of receptors experiencing adverse impacts and those experiencing beneficial impacts; and
- the influence and validity of any assumptions adopted when undertaking the prediction of impacts

Assumptions and Limitations

A13.67 A future year of 2022 was chosen for the purposes of the operational phase assessment. Should the development be fully occupied prior to 2022 it is feasible that the impacts may be underestimated. However, this was accounted for through the sensitivity test by assuming no improvement in emissions. Beyond 2022 with or without the development emissions from road traffic sources are likely to get progressively smaller.

A13.68 No suitable monitoring data exists for the purposes of model verification, as described in the section titled. 'Model Verification'. Therefore, based on studies undertaken at AECOM for numerous projects an assumed verification factor was applied. It is deemed that this provided a robust approach that should not result in impacts being underrepresented.

A13.69 The assessment uses advanced dispersion modelling software to predict pollutant concentrations at sensitive receptor locations. The software uses algorithms to predict the dispersion of emissions from the source, to the receptor, as carried by the meteorological conditions included. Some of the potential error associated with dispersion modelling is accounted for within the dispersion model verification process.

A13.70 Emission standards of vehicles in 2017 (the base year) were assumed to represent 2013 and in 2022 assumed to be the same as 2017. Hence emissions will improve but not in the order of magnitude anticipated by projections included in the Emission Factor Toolkit. In addition, the average hourly emission rate for each link is assumed to be present for every hour over each 24 hour period. Both of these factors are likely to give a conservative outcome.

Baseline Conditions

Summary of Local Air Quality Management

A13.71 The Local Air Quality Management (LAQM) responsibilities in the vicinity of the proposed development site are undertaken by Kirklees Council. The proposed site is located in close proximity to Kirklees Council's northern border with Bradford Metropolitan District Council (BMDC). Kirklees Council has declared two Air Quality Management Areas (AQMAs), neither of which are near to or will be affected by the development. BMDC has declared four AQMAs for the annual mean NO_2 objective. The nearest (AQMA 1: At the junction of Manchester Road and Mayo Avenue, Bradford) is located approximately 3 km to the north west of the site and therefore is very unlikely to experience an impact owing to the proposed development.

Local Air Quality Monitoring

A13.72 Kirklees Council undertakes monitoring of NO_2 using continuous monitoring and passive diffusion tubes near to the proposed site, while BMDC undertakes no monitoring in the vicinity of the proposed site.

Nitrogen Dioxide

Continuous Monitoring

A13.73 Kirklees Council operates a network of six continuous monitors as well as a mobile trailer unit. The nearest to the proposed site is RS2 located approximately 360 m to the south of the proposed site next to Junction 26 of the M62 (**Addendum Technical Appendix A13.0**, Figure A3). According to **Table A13.6** (KC, 2016) (Ref A13.29) annual mean NO_2 concentrations were above the objective in 2010 and then significantly decreased in 2011. The trend was down up to 2014 where the annual mean increased in 2015 but well below the objective value.

Table A13.6: Continuous Monitored Concentrations

ID	Location	Type	Annual Mean NO_2 Concentrations (µg/m^3)					
			2010	2011	2012	2013	2014	2015
RS2	Bradford Road	Roadside	**47.2**	37.7	37.4	32.4	33.1	35.7

Notes: Concentrations above the objective indicated in bold.

Passive Monitoring

A13.74 Kirklees Council operates an extensive network of diffusion tubes across the district. The nearest to the proposed site is DT68, located approximately 420 m to the south of the proposed site, on Bradford Road, Cleckheaton, near to the continuous monitor, RS2 (**Addendum Technical Appendix A13.0**, Figure A3). According to **Table A13.7**, the annual mean NO_2 concentration was 51 µg/m^3 in 2011 and then as per the trend noted for RS2 there was a declining trend until 2015 where emissions started to increase one more.

Table A13.7: Monitored NO_2 Concentration

ID	Location	Type	Annual Mean NO_2 Concentrations (µg/m^3)					
			2010	2011	2012	2013	2014	2015
DT68	Cleckheaton, Bradford Road	Roadside	**62**	**51**	**44**	**42**	**43**	**45**

Notes: Concentrations above the objective indicated in bold.

Particulate Matter

A13.75 Monitoring of PM_{10} is undertaken at six sites across the district, the nearest of which to the proposed site is RS2, located on Bradford Road, south of the M62. According to **Table A13.8**, annual mean PM_{10} concentrations have been stable between 2009 and 2013 and well below the objective.

Table A13.8: Monitored PM_{10} concentrations

ID	Location	Type	Annual Mean PM_{10} Concentrations (µg/m^3)					
			2010	2011	2012	2013	2014	2015
RS2	Bradford Road	Roadside	19.1	18.6	19.1	19.1*	15.9	NA

* Note: 2013 data has been annualised

Background Concentrations

A13.76 A large number of sources of air pollutants exist which individually may not be significant, but collectively, over a large area, need to be considered. The concentrations calculated by the model due to vehicle emissions can then be added to these background concentrations to give the total concentration at a receptor.

Monitored Background Concentrations

A13.77 Kirklees Council currently undertakes monitoring at four background sites, the nearest of which to the proposed site are provided in **Table A13.9**. Of these, the nearest monitoring location to the proposed site is DT37, located approximately 2.8 km to the south west. Annual mean NO_2 concentrations recorded at this site were significantly higher than background sites elsewhere in the district and higher than many of the roadside sites. DT37 is located less than 80 m from the M62 and therefore concentrations at this site will be influenced by road traffic emissions. The site exceeded the annual mean NO_2 objective in 2010. DT75 is located approximately 4.2 km south east of the proposed site. Annual mean NO_2 concentrations at this site were well below the objective. The site was removed in November 2012.

Table A13.9: Background Monitored NO_2 Concentrations

ID	Location	Approximate Distance to Proposed Site (km)	Annual Mean NO_2 Concentrations (µg/m^3)				
			2011	2012	2013	2014	2015
DT37	Hartshead, Highmoor Lane	2.8	37	36	31	N/A	36
DT75	Liversedge, Vernon Rd	4.2	26	25	N/A	N/A	N/A

Notes: *Prior to the 2014 Progress Report, diffusion tube DT37 was numbered DT49.

Mapped Background Concentrations

A13.78 Modelled estimations of background air quality concentrations are provided by Defra [Ref 13.13] for each 1 km square in the UK between 2010 and 2030. To avoid double counting, specific road sources must be discounted from the total background pollutant concentrations, to give 'adjusted' values (i.e. if those specific sources are included within the grid). Given the assumption that emission are unlikely to reduce in 2022 compared to 2017 then it's reasonable to assume that background emissions will remain equally

similar. Background concentrations extracted from Defra maps are shown in **Table A13.10.** These data were downloaded in October 2017.

Table A13.10: Background concentrations taken from Defra maps

Pollutant	2017/2022	
	Total from grid	Adjusted
NO_x	28.4	23.3
NO_2	19.8	15.5
PM_{10}	17.3	17.2
$PM_{2.5}$	11.3	11.2

Summary of background effects

A13.79 The 2017 and 2022 mapped background concentrations for the grid square 417500,427500 were considered to be the most appropriate background concentrations to use in this assessment. This is because the closest monitoring sites were situated in more urban environments and were likely to be influenced by local major roads. The contribution from modelled roads was removed from the mapped background concentrations to avoid double counting as outlined in Defra's LAQM.TG(16) (RefA13.9).

A13.80 As no background monitoring of PM_{10} is undertaken near to the proposed site, the adjusted mapped background concentrations were applied to the model remains valid.

A13.81 The background concentrations used in the assessment are provided in **Table A13.11**.

Table A13.11: Background Pollutant Concentrations applied to the Assessment (µg/m3)

Pollutant	2017/2022
NO_X	23.3
NO_2	15.5
PM_{10}	17.2
$PM_{2.5}$	11.2

Predicted Significant Effects

A13.82 As discussed in the assessment methodology, and detailed in **Addendum Technical Appendix A13.0**, a four step process was followed to determine the risk of potential impacts during the construction phase.

STEP 1: Screen the Requirement for a more Detailed Assessment

A13.83 The proposed site is located at the decommissioned North Bierley Wastewater Treatment Works and surrounding arable land. The nearest sensitive receptors to the proposed site are the residential properties adjacent to the northern boundary of the site on Cliff Hollins Lane. These properties are located approximately 300 m from the proposed demolition works associated with the existing wastewater treatment works.

A13.84 Woodlands Primary School is located approximately 170 m from the proposed main site boundary and within 50m of the proposed car park.

A13.85 There are no designated ecological sites of concern with regards air quality, as defined by the IAQM Guidance (2014) (RefA13.19), located within 50 m of the site.

STEP 2: Assess the Risk of Dust Impacts

Demolition

A13.86 As part of the proposal, the buildings and structures associated with the decommissioned wastewater treatment works will be demolished. The volume of these buildings and structures is 25,288 m^3 and therefore the dust emission class is considered to be 'Medium'.

Earthworks

A13.87 The residential and employment areas of the development site total approximately 13.2 hectares and therefore the magnitude of the dust emission class is considered to be 'Large'. The car park to be constructed is considered to be 'small'.

Construction

A13.88 The proposal comprises up to 35,284 sq m of employment space. The potential dust emission classification was considered to be 'Large'.

Track-out

A13.89 With regard to the criteria for the dust-generating potential of the surface material and the length of unpaved road, it is considered to be a conservative approach to classify the potential dust effects as 'Medium'.

A13.90 A summary of the dust emission magnitude for each activity is provided in **Table A13.12**.

Table A13.12: Summary of the Dust Emission Magnitude

Source	Dust Emission Classification
Demolition	Medium
Earthworks	Large
Construction	Large

Track-out	Medium

STEP 2B: Define the Sensitivity of the Area

A13.91 The following were taken into consideration when determining the sensitivity of the area to dust soiling and health effects of PM_{10}:

- The site is located near to a residential area with dwellings located adjacent to the site and therefore the receptors are considered to be high sensitivity.
- The car park to be constructed is within 50m of Woodlands C. of E. Primary School and therefore the sensitivity of the area is considered to be high.
- There are < 10 properties within 20m of the site boundary and <10 properties within 350 of the proposed demolition works.
- The site is not within 50 m of a designated ecological site of concern with regards air quality.
- PM_{10} monitoring undertaken near to the proposed site, recorded an annual mean concentration of 15.9 µg/m^3 in 2014.

A13.92 Taking the above into consideration, in general the sensitivity of the site is Medium to dust soiling effects and Low for health effects. This excludes the proposed car park area, which is considered to be of high sensitivity to dust soiling effects due to its proximity to the school. The proposed demolition works are also considered an exception, as due to the distance of the nearest sensitive receptors, the sensitivity of the area is considered to be Low to dust soiling and to human health effects.

STEP 2C: Define Risk of Impacts

A13.93 Taking into consideration the conclusion from Steps 2A and 2B, the risk of dust impacts for each activity are provided in **Table A13.13**.

Table A13.13: Risk of Unmitigated Dust Impacts

Source	Dust Soiling	Human Health
Demolition	Medium	Low
Earthworks	Medium	Low
Construction	Medium	Low
Track Out	Low	Low

A13.94 Overall demolition and construction phase impacts may have a **minor to moderate adverse** effect without mitigation.

Effect during operational phase: long term

A13.95 Local air quality concentrations have been predicted for the following scenarios:

- Base year, 2017
- 2022 DM (Do-Minimum), without the proposed development; and
- 2022 DS (DS, Do-Something), with the proposed development

A13.96 In addition, in accordance with the draft West Yorkshire Air Quality and Emissions Technical Planning Guidance (WYLEG, 2014) (RefA13.24), the results of the assessment included a level of sensitivity whereby it was assumed that there will be no reduction in traffic related emission factors between the base year (2017) and the future year (2022)

Nitrogen Dioxide

A13.97 Annual mean concentrations of NO_2 were predicted at the selected receptor locations or the development proposal. The results are presented in **Table A13.14**. The impact of the development at the sensitive receptors is presented as the absolute change in annual mean NO_2 concentration. Impact descriptors are calculated as described in **Table A13.14**.

Table A13.14: Predicted Annual Mean NO_2 Concentrations ($\mu g/m^3$)

Receptor ID		Annual Mean NO_2 Concentration ($\mu g/m^3$)			Impact ($\mu g/m^3$)	Impact descriptor
		2017	2022DM	2022DS		
1	Cliff Hollins Lane east	24.1	23.4	24.0	0.6	Negligible
2	Cliff Hollins Lane west	28.7	28.3	28.6	0.3	Negligible
3	Woodlands Primary School	24.7	23.9	24.2	0.3	Negligible
4	Wyke Lane	27.6	24.8	25.3	0.5	Negligible
5	Bradford Road, north of Mill Carr Road	36.1	30.8	31.4	0.6	Negligible
6	Bradford Road, opposite Cross Street	30.7	26.4	26.7	0.3	Negligible
7	Bradford Road,	32.2	28.1	28.9	0.8	Negligible

Receptor ID		Annual Mean NO_2 Concentration ($\mu g/m^3$)			Impact ($\mu g/m^3$)	Impact descriptor
		2017	2022DM	2022DS		
	opposite St Andrew's Crescent					
8	Bradford Road, south	26.9	23.9	24.3	0.4	Negligible
9	Bradford Road, centre	24.0	22.0	22.3	0.3	Negligible
10	Bradford Road, north	25.9	23.4	23.9	0.5	Negligible

A13.98 According to **Table A13.14**, 2022 do minimum the annual mean NO_2 concentrations are predicted to decrease at all modelled receptors (compared to the 2017 baseline) due to anticipated improvements to vehicle emission standards. Note that the base year emission factors represent a 2013 fleet and 2022 a 2017 fleet and so overall emissions are expected to improve in 2022 do minimum (even with the forecasted increase in traffic volumes) but to a lower order of magnitude than if the assessment were to assume fleet projections (and associated emission factors) in line with the EFT. This approach is very conservative to account for the recent evidence that vehicles underperform in real world driving conditions (A13.32). No exceedances of the annual mean objective were predicted at any of the receptors in 2022 with or without the development. For all receptors the development increases the annual mean NO_2 concentration. The highest concentration of 31.4 $\mu g/m^3$ (with development) was predicted at a residential property located on Bradford Road, near to the junction with Mill Carr Hill Road, and a concentration of 28.9 $\mu g/m^3$ was predicted at a residential property on Bradford Road, opposite St Andrew's Crescent. The reason for this is due to the proximity of these receptors to traffic emission sources on the Bradford Road and the M606. As a sense check the results were compared with the nearest monitoring data (RS2 and DT68 – Junction 26 of the M62). It is reasonable to assume that air quality at the sensitive receptors would better that being monitored at RS2 and DT68, which has been confirmed. In addition, in the majority of assessments undertaken where a dominant emissions source is motorway based (as per this Scheme) modelling adjustment factors of near unity are common place. Any further arbitrary adjustment was therefore deemed to be overly conservative and unjustified in real terms.

A13.99 Comparisons between the DS and DM scenarios indicated that adverse impacts were predicted at all receptors. The largest impact, of 0.8 $\mu g/m^3$, was predicted at receptor 7 on Bradford Road, opposite St. Andrews Crescent. As discussed earlier in this Chapter, a change in traffic flow of > 5% was predicted on this road, due to the proposed development. According to **Table A13.14** the impact at this receptor can be described as 'Negligible'. At all other sensitive receptors, the impacts were also described as 'Negligible'; **and not significant**.

A13.100 Pollutants PM_{10} and $PM_{2.5}$ were modelled at all sensitive receptors. All results in 2017 and 2022 with and without the proposed development were well below the annual average air quality objective of 40 µg/m^3 and 25 µg/m^3 for PM_{10} and $PM_{2.5}$ respectively. The full results for annual mean PM_{10} are shown in **Table A13.15**. Noted that according to IAQM significance criteria all sensitive receptors were described as 'Negligible'. It's worth noting that the PM_{10} results are very similar to monitoring site RS2 from 2010 to 2013 and above that in 2014 (no results were recorded in the 2015). This perhaps improves the level of confidence in the modelling and supports the argument that arbitrary adjustment should not be applied. The impacts at all receptors for $PM_{2.5}$ were described as 'Negligible'; **and not significant**.

Table A13.15: Predicted Annual Mean PM_{10} Concentrations (µg/m3)

Receptor ID		Annual Mean PM_{10} Concentration (µg/m^3)			Impact (µg/m^3)	Impact descriptor
		2017	2022DM	2022DS		
1	Cliff Hollins Lane east	18.1	18.2	18.3	0.1	Negligible
2	Cliff Hollins Lane west	18.6	18.8	18.9	0.1	Negligible
3	Woodlands Primary School	18.3	18.4	18.4	0.1	Negligible
4	Wyke Lane	18.7	18.7	18.8	0.1	Negligible
5	Bradford Road, north of Mill Carr Road	20.1	20.0	20.1	0.1	Negligible
6	Bradford Road, opposite Cross Street	19.2	19.2	19.2	0.0	Negligible
7	Bradford Road, opposite St Andrew's Crescent	19.5	19.5	19.7	0.2	Negligible
8	Bradford Road, south	18.6	18.6	18.7	0.1	Negligible
9	Bradford Road, centre	18.2	18.2	18.3	0.1	Negligible
10	Bradford Road, north	18.5	18.5	18.6	0.1	Negligible

Damage Costs

A13.101 In accordance with the draft West Yorkshire Air Quality and Emissions Technical Planning Guidance (WYLEG, 2014) (**Error! Reference source not found.**A13.24) and Defra's 2015 *Update in Valuing Changes in NOx and NO_2 Emissions* [Ref A13.30], the damage costs associated with of the proposed development were calculated. The proposed development is anticipated to result in an additional 1,388 movements per day (refer to **Addendum Technical Appendix A13.0**, Table 12-Traffic data), of which approximately 26.5% will be HGV movements. Emissions of NOx and PM10 associated with the development movements were derived from the EfT (Ref A13.11), which determined that an additional 1,646 kg/year (1.65 tonnes/year) of NOx and 173 kg/year (0.17 tonnes/year) of PM_{10} would be released once the development is operational (i.e. in the opening year. This is based on each movement being 10 km.

A13.102 According to the Interdepartmental Group on Costs and Benefits- IGCB [Ref], the central average air quality damage cost per tonne of NOx is £21,044 and per tonne of PM_{10} is £58,128 based on 2015 prices. With reference to the additional NOx and PM_{10} emissions associated with the development, derived from the EfT, the central damage cost of the development was calculated over a five year period

Pollutant	Annual Emissions (kg/yr)	Annual Emissions (tonnes/yr)	IGBG damage costs per tonne (£)	Damage cost (tonne/yr)	Damage cost (tonne/5yr)
NOx	1,646	1.65	£21,044	£33,981	£169,458
PM10	173	0.17	£58,125	£11,111	£55,555
				Total	**£225,014**

Table A13.16: Central Air Quality Damage Costs

Pollutant	Annual Emissions (kg/yr)	Annual Emissions (tonnes/yr)	IGBG damage costs per tonne (£)	Damage cost (tonne/yr)	Damage cost (tonne/5yr)
NOx	1,646	1.65	£21,044	£33,981	£169,458
PM_{10}	173	0.17	£58,125	£11,111	£55,555
				Total	**£225,014**

A13.103 The damage cost of the proposed development over a five year period was considered to be £225,014.

A13.104 IAQM significance criteria determined that the impact of the development was considered 'Negligible' for NO_2, PM_{10}, $PM_{2.5}$. Overall following IAQM guidelines the impacts are considered to be 'not significant'. This assessment takes into

consideration existing local air quality as well as the magnitude of change in pollutant concentrations due to the proposed development. In contrast, the assessment of the air quality damage costs associated with the proposed development determined that the cost of the development would be £225,014; however, this assessment is based on emissions not concentrations and fails to take into consideration existing air quality, the location, or the dispersion of pollutants.

Scope of Mitigation

Construction Phase:

A13.105 Determining appropriate mitigation measures corresponds to Step 3 of the assessment methodology.

A13.106 A number of mitigation measures can be adopted to reduce the production and/or dispersal of dust to lessen the nuisance and limit the human health impacts. Ideally dust should be controlled at the source as once airborne it is difficult to suppress.

A13.107 Appropriate mitigation measures are provided in the IAQM 'Guidance on the assessment of dust from demolition and construction' (IAQM, 2014) (A13.19). However, additional mitigation measures are provided in the following guidance documents:

- BRE (2003a): Guidance on the Control of Dust from Construction and Demolition Activities (Ref A13.4);
- BRE (2003b): Controlling Particulates, Vapours and Noise Pollution from Construction Sites (Ref A13.5); and,
- Greater London Councils (2014): The control of dust and emissions from construction and demolition: Supplementary Planning Guidance (Ref A13.18).

A13.108 According to the IAQM Guidance (IAQM, 2014) (Ref A13.19), the dust risk for each of the activities determined in Step 2C should be used to define the appropriate site specific mitigation measures to be adopted.

A13.109 Appropriate mitigation measures, taking into consideration the risk of dust impacts determined in Step 2C, are provided in **Table A13.17**. Mitigation should be implemented through a site-specific Construction Environmental Management Plan (CEMP); these tried and tested measures can be secured through the CEMP and standard planning conditions on any future planning permission. Contractors should also carry the 'Considerate Contractors' registration which is a measure typically included in the CEMP.

Table A13.17: Potential Site Operations and Methods of Controlling Dust

Activity	Possible Dust Control Methods
Communication	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

Activity	Possible Dust Control Methods
	air quality and dust issues on the site boundary. Display the head or regional office contact information.
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 off site and the action taken to resolve the situation in the log book.
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 windows sills within 100m of site boundary, with cleaning to be provided. Carry out regular site inspections, 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.
Preparing and maintaining the site	Plan site layout so that machinery and dust causing activities are located away from receptors as far as possible. Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles 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 Cover, seed or fence stockpiles
Operating vehicle/machinery and sustainable travel	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 15mph on surfaced and 10mph on un-surfaced haul roads
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays.

Activity	Possible Dust Control Methods
	Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation Use enclosed chutes and conveyors and covered skips Minimise drop heights Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable
Waste Management	Avoid bonfires and burning of waste materials
Demolition	Soft strip inside buildings before demolition. Ensure effective water suppression is used during demolition works.
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	Avoid scabbling, if possible Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems.
Track-out	Use water-assisted dust sweepers on access and local roads. Avoid dry sweeping large areas Ensure vehicles entering and leaving sites are covered to prevent escape of material during transport Inspect and record on-site haul routes for integrity and instigate necessary repairs on surfaces Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned Implement wheel wash facilities Access gates to be located at least 10 m from receptors where possible

Operational Phase Mitigation

A13.110 The assessment of the impact of the development upon pollutant concentrations at sensitive receptors concluded that any impacts would be 'not significant'. Nevertheless, following the draft West Yorkshire Air Quality and Emissions Technical Planning Guidance (WYLEG, 2014) (Ref A13.24), determining appropriate operational

phase mitigation measures corresponds to Stage 3 of the assessment methodology. According to the guidance the outcome of Stage 2 identifies the level of emissions impacts, in terms of damage costs, which should then be used to determine the level of mitigation required to negate the potential effects upon health and the local environment

A13.111 For 'Major' proposals, the pollution damage costs attributed to the proposal emission changes will determine the level of mitigation compensation required to negate the impact. The damage costs associated with the proposed development were calculated to be £225,014 in total, over five years.

A13.112 A Travel Plan (**Addendum Technical Appendix A11.0**) has been prepared for the development which aims to reduce the number of single occupancy car trips associated with the development, and encourage alternative and more sustainable means of travel. To achieve this, the following objectives have been identified:

- To minimise the number of single occupancy car trips to the site;
- To encourage the use of alternatives modes of travel by promoting the benefits of these in terms of cost savings, health benefits etc;
- To encourage safe and viable alternatives to single occupancy car trips (wherever possible) for trips generated by the site;
- To enable the development to protect and enhance the environment; and
- To ensure the on-going development and implementation of sustainable travel practices in the longer term.

A13.113 The Travel Plan includes 18 measures to meet these objectives, including:

- End occupiers will be required to develop and implement bespoke unit Travel Plans and appoint Travel Plan responsibilities to assist with their delivery.
- The results of the surveys from each individual occupier shall be collated by the Travel Plan Coordinator, who will update the Travel Plan and Action Plan accordingly on an annual basis.
- The Travel Plan Coordinator will encourage occupiers to register with the West Yorkshire Travel Plan Network www.wytravelplan.com.
- All new employees will be provided with a new starter induction pack, detailing how they can travel to work by means other than the private car.
- The Travel Plan Coordinator will promote national and local sustainable travel events, including the Bike Week, Walk to Work Week and National Liftshare Day.
- The Travel Plan Coordinator will promote the benefits of walking in relation to general health and well-being and will promote walking to work for staff and residents identified as 'living close by'

- Consideration will be given in providing personal attack alarms to staff and residents as well as setting up a walking group with 'walking buddies'
- The site wide Travel Plan Coordinator will encourage the implementation of the Cycle 2 Work salary sacrifice scheme.
- The Travel Plan Coordinator will establish and chair a Bicycle User Group for employees and residents.
- Public Transport timetable information will be communicated to new staff and residents by the Travel Plan Coordinator and will be provided on the Induction Pack.
- The site wide Travel Plan Coordinator will encourage occupiers to offer discounted MetroCards to employees and residents.
- The site wide Travel Plan Coordinator will encourage all employees and residents to register with www.WYcarshare.com.
- 10% of parking will be reserved for car sharers for each unit.

A13.114 The draft West Yorkshire Air Quality and Emissions Technical Planning Guidance recommends a suite of mitigation which can be adopted, where appropriate, for major' schemes to negate the impact. Several of these measures are already included in the Travel Plan discussed above, and so are considered to be designed mitigation. The Travel Plan will be conditioned on any future planning permission to secure its implementation and monitoring.

A13.115 At this stage the final use of the site has not been determined other than a broadly defined planning based characterisation. This assessment has indicated that the development will have an impact on air quality but that the impact will be 'Negligible'. Nevertheless damage costs have been calculated based on the additional annualised emissions which should be mitigated. It is proposed that At this stage the final use of the site has not been determined other than a broadly defined planning based characterisation. This assessment has indicated that the development will have an impact on air quality but that the impact will be 'Negligible'. Nevertheless damage costs have been calculated based on the additional annualised emissions which should be mitigated. Acknowledged in the West Yorkshire AQ and Emissions Technical Planning Guidance are the various default mitigation measures commensurate with schemes with different characteristics. This application specifically identifies measures included in the Draft Travel Plan (**Addendum Technical Appendix A11.1** which are aimed at increasing sustainable travel modes and reducing travel related emissions; user specific Travel Plans will be prepared for each unit on the site prior to occupation, and will reflect the overall requirements within the Draft Travel Plan. Once implemented in full, the measures identified within the Travel Plans to increase sustainable travel patterns will equate to the identified Damage Costs.

Residual Effect Assessment

Construction Phase

A13.116 Should effective dust mitigation measures be enforced and implemented within a Dust Management Plan and/or CEMP then the residual impact of the construction phase will be not significant for all the activities, with respect to dust soiling and PM10 effects

Operational Phase

A13.117 Taking account of uncertainties in air quality projections, the residual local air quality impacts of the proposed development are predicted to be **'Negligible'** and overall the effects are considered to be **'not significant'**.

A13.118 The degree to which the measures identified in the Travel Plan will reduce the calculated damage costs cannot readily be quantified, nevertheless, the amount (value) of the designed mitigation contained within the Travel Plan is significant and should be offset against the calculated damage cost. A summary of the construction and operational impacts are shown in **Table A13.18**.

Table A13.18: Summary of Residual Effects

Effect	Impact Area	Phase	Significance	**Impact (Beneficial/ Adverse)**	**Period**
Dust and emissions from demolition and construction related activities causing a nuisance and affecting public health	Local	Construction	Negligible	-	Short Term (temporary)
Increase in emissions due to development traffic	Local	Operational	Negligible	-	Long Term (permanent)

Cumulative effect assessment

A13.119 The inclusion of other committed development has not been requested by the Local Authority and therefore is not included in the traffic data provided for the air quality assessment. However, traffic data does assume a standard level of growth between now and 2022 – and therefore whilst specific committed development may not be accounted for, more general regional growth is accounted for.

A13.120 As no significant committed development is assumed, there is not expected to be a significant cumulative impact at the Proposed Development or surrounding area.

Conclusions

A13.121 An air quality impact assessment was undertaken for a development proposed for the former waste water treatment works at North Bierley near to junction 26 of the M62. The assessment considered the impact caused by both the construction and operation of the site. In terms of construction the development of the site will cause a certain 'low' to 'medium 'level of dust soiling which would benefit from appropriate mitigation measures as provided in the IAQM 'Guidance on the assessment of dust from demolition and construction'. For the operational phase assessment the level of traffic activity, owing to the proposed development, was considered 'Negligible' at sensitive receptors for pollutants NO_2 and PM_{10} and overall 'Not significant'. This assessment takes into consideration existing local air quality as well as the magnitude of change in pollutant concentrations due to the proposed development. In contrast, the assessment of the air quality damage costs associated with the proposed development determined that the cost of the development would be £225,014. Mitigation options for the operational impacts include implementing a travel plan and a vehicle activity survey to determine the baseline situation to inform a low emissions strategy.

References

A13.1 Air Quality Archive (2012) http://www.defra.gov.uk/environment/quality/air/air-quality/laqm/ (accessed July 2015)

A13.2 Air Quality Framework Directive (96/62/EC) on ambient air quality assessment and management

A13.3 Bradford Metropolitan Borough Council (2012) 2012 Updating and Screening Assessment

A13.4 BRE (2003a) Guidance on the Control of Dust from Construction and Demolition Activities

A13.5 Bradford BRE (2003b) Controlling Particulates, Vapours and Noise Pollution from Construction Sites

A13.6 COMEAP (1998). The Quantification of the Effects of Air Pollution on Health in the United Kingdom. HMSO, London.

A13.7 Council Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe.

A13.8 Defra (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland

A13.9 Defra (2016). Local Air Quality Management Technical Guidance LAQM.TG(16)

A13.10 Defra (2010) The Air Quality Standards Regulations 2010 Statutory Instrument 2010 No. 64

A13.11 Defra http://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html (Accessed October 2017)

A13.12 Defra https://www.gov.uk/air-quality-economic-analysis (Accessed October 2017)

A13.13 Defra http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html (Accessed October 2017)

A13.14 Department for Communities and Local Government (2014), National Planning Policy Framework and Air Quality Planning Practice Guidance. Available at http://planningguidance.planningportal.gov.uk/blog/policy/ (accessed July 2015)

A13.15 Department for Transport (DfT) http://webarchive.nationalarchives.gov.uk/+/http:/www.dft.gov.uk/adobepdf/165237/202657/guidanceontaappendixb (accessed, July 2015a)

A13.16 Department for Transport (DfT) http://www.dft.gov.uk/traffic-counts/cp.php?la=Kirklees (accessed July 2015b)

A13.17 Environmental Protection UK and Institute of Air Quality Management, Land-use planning and development control: planning for air quality (January 2017)

A13.18 Greater London Councils (2014). The control of dust and emissions from construction and demolition: Supplementary Planning Guidance

A13.19 Institute of Air Quality Management (IAQM) (2014) Guidance on the assessment of dust from demolition and construction

A13.20 Kirklees Council (2012) 2012 Updating and Screening Assessment

A13.21 Kirklees Council (2013) 2013 Air Quality Progress Report

A13.22 Kirklees Council (2014) 2014 Air Quality Progress Report

A13.23 Kirklees Council (2015) 2015 Updating and Screening Assessment

A13.24 West Yorkshire Low Emission Group (2014) Draft West Yorkshire Air Quality and Emissions Technical Planning Guidance

A13.25 Publication Draft Local Plan Strategy & Policies (2016): Kirklees Council Local Plan: November 2016

A13.26 Transport Strategy 2040 (2017): Draft Transport Strategy for adoption by WYCA 3rd August 2017.

A13.27 BMDC (2017).Core Strategy Development Plan (2017). https://www.bradford.gov.uk/planning-and-building-control/planning-policy/core-strategy-dpd/?Folder=10+Adoption

A13.28 CERC (2015). ADMS-Roads User Guide Version 4 November 2015

A13.29 Kirklees Council (2016) 2016 Annual Status Report

A13.30 Defra (2015) 'Valuing impacts on air quality: Updates in valuing changes in emissions of Oxides of Nitrogen (NOX) and concentrations of Nitrogen Dioxide (NO_2)' www.gov.uk/guidance/air-quality-economic-analysis

A13.31 Defra (accessed 2017), Damage costs by location and source (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/460398/air-quality-econanalysis-damagecost.pdf) (Accessed October 2017)

A13.32 DFT (2016) Vehicle Emission Testing Programme. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/548148/vehicle-emissions-testing-programme-web.pdf

A13.33 Kirklees Council (2007). Unitary Development Plan. http://www.kirklees.gov.uk/beta/planning-policy/unitary-development-plan.aspx

A14. Inter-active and Cumulative Effects

A14.1 This Chapter replaces in its entirety Chapter 14 of the July 2016 ES. It outlines the inter-active and cumulative effects which may arise during the construction and operational stage of the development.

Inter-active effects

A14.2 An inter-active effect is one where one effect (ie an increase in traffic) impacts in different topic areas as set out in the technical Chapters may act in conjunction to either beneficial or detrimental effect. The only Chapters where interactive effects are identified are assessed in each topic Chapter, where appropriate.

A14.3 The greatest potential for inter-active effects is during the site demolition and construction phase. The greatest potential for the combination of effects is on existing sensitive receptors in terms of a combination of noise, air quality (including dust) and construction traffic. However, these are considered to be only of minor significance due to their relatively short and intermittent nature. Furthermore, tried and tested mitigation measures can be secured through standard planning conditions to reduce any impacts.

Cumulative effects

A14.4 A cumulative effect occurs between developments, which are those effects of the development that may interact in a beneficial or negative manner with the effects of other committed schemes that are not currently in existence but may be by the time the Proposed Development is implemented.

A14.5 The cumulative effects are considered in each topic Chapter where appropriate, the identified cumulative effects can be summarised as follows:

Table 14.1: Summary of Cumulative effects

Topic Chapter	Committed Scheme	Potential Cumulative Effects
Chapter A6 Socio-economic	Lindley Moor employment site and Slipper Lane employment site	**Major beneficial** Employment Productivity Business Rates
Chapter A7 Landscape and Visual Impact	Highways improvements to Junction 26 M62, Chainbar roundabout – as set out in the KMBC UDP	Visual impact
Chapter A8 Ground Conditions	No committed schemes of relevance identified	
Chapter A9 Ecology	No committed schemes of relevance identified	

Chapter A10 Flood risk and drainage	No committed schemes of relevance
Chapter A11 Highways	No committed schemes of relevance identified
Chapter A12 Noise	No committed schemes of relevance identified
Chapter A13 Air Quality	No committed schemes of relevance identified

A14.6 Chapter A7 – Landscape and Visual Impact considered the possible effect of the highway improvements to the Junction 26 of the M62 as set out in the Kirklees Councils Local Plan. These proposals have not been confirmed, and therefore it is difficult to assess the potential effect. Based on the potential line as set out in the Kirklees Plan it is considered that this would affect views into the site and provide additional planting. Apart from Chapter 6 – Socio-economics, there were no committed schemes of relevance to the other Chapters within the ES.

A14.7 No significant adverse effects are identified from the cumulative assessment.

A15. Summary of Mitigation Measures and Residual Effects

A15.1 This Chapter replaces in its entirety Chapter 15 of the July 2016 ES.

A15.2 The preparation of the ES has been undertaken in parallel with the design process. As a consequence, many measures to mitigation likely significant adverse environmental effects have been incorporated into the Proposed Development design in order to avoid, reduce or offset such effects. As such, many mitigation measures, have been "designed in" and these are set out in Chapter A4 Proposed Development, and addressed throughout the ESA.

A15.3 Additional mitigation measures have been proposed in relation to both construction and operation and these have been set out in each of the preceding technical chapters. These have been defined and clear and binding methods set out to ensure they are secured. A summary of these additional measures is set out below, **Table A15.1**.

Table A15.1 Summary of Additional Mitigation Measures

Topic Area	Measures	How it can be secured
Ground conditions, Air quality, Transport, Noise, Flood Risk and Drainage, Ecology	Construction Environmental Management Plan (CEMP)	Planning condition
Flood risk and drainage, and Ground Conditions	Drainage Strategy to secure detail of SUDs and foul drainage, with water efficiency measures to be included in detailed design	Planning condition
Ground conditions	Adherence to Remediation Strategy	Planning condition
Highways and Transport	Framework Travel Plan	Planning condition
Ecology	BEMP, lighting scheme and detailed design	Planning condition
Noise	Operational noise limits, traffic management plan, detailed design and detailed glazing design, noise assessment for 24hr operations including mitigation in detailed design	Planning condition
Air Quality	Framework Travel Plan and CEMP	Planning condition

Landscape and visual	Securing landscape scheme	Planning condition

A15.4 The residual effects of the Proposed Development have been assessed in the technical chapters, as outlined in the summary tables. **Table A15.2** summarises the main residual effects of the Proposed Development. To provide further clarification on the nature of the effects, each as been identified as:

- Local, regional or national in scale (L,R,N)
- Direct or indirect (D/I)
- Permanent or temporary (P/T)
- Short, medium or long term (ST,MT,LT)
- Reversible or Irreversible (R/I)

A15.5 **Table A15.2** below summarises the residual effects of the revised Proposed Development.

Table A15.2 Summary of Significant Residual Effects

Topic	Stage	Description	Significance	Extent (L/R)	Nature (D/I, T/P, ST/MT/LT, R/I)
Socio-economic	Construction	Employment – Local	Substantial beneficial	L	D/I, T,ST
		Economic Productivity - Local	Substantial beneficial	L	D/I, T,ST
	Operational	Business rates	Moderate beneficial	L	D/I, P,LT
Landscape and Visual	Construction	The Site	Moderate	L	D,T
		Batley Fringe Incised Valleys – Landscape Character area	Moderate adverse	L	D,T,LT,I
		Viewpoint 1 – Cliff Hollins Farm	Moderate adverse	L	D,T, LT, I
		Viewpoint 2 – Properties at grid references 417862 and 428084	Moderate adverse	L	D,T
		Viewpoint 3 – Bungalows on Cliff Hollins Lane	Moderate	L	D,T,LT,I
		Viewpoint 4 – Footpath with site / along access road	Major/moderate adverse	L	D,T,LT,I
	Operational	The Site	Moderate beneficial	L	D,P

	Batley Fringe Incised Valleys – Landscape Character area	Moderate adverse	L	D,P,LT,I
	Viewpoint 1 –Cliff Hollins Farm	Moderate neutral	L	D,P, LT,I
	Viewpoint 2 – Properties at grid references 417862 and 428084	Moderate/minor adverse	L	D,P,LT,I
	Viewpoint 3 – Bungalows at Cliff Hollins Lane	Moderate neutral	L	D,P,LT,I
	Viewpoint 4 – Footpath within site / along access road	Major/moderate adverse	L	D,P,LT,I
Ground conditions	No Significant effects identified			
Ecology	Invasive Species	Minor/moderate beneficial	L	D,T
	Invasive species	Minor moderate beneficial	L	D,P
Flood Risk and Drainage	No significant effects identified			
Highways and Transport	No significant effects identified			
Noise	No significant effects identified			
Air Quality	No significant effects identified			

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