



ENVIRONMENTAL STATEMENT

FOR THE PLANNING APPLICATION FOR THE CONTINUATION OF THE LANDFILLING OPERATIONS AT THORNHAUGH LANDFILL SITE AND THE IMPORTATION OF CLEAN NATURALLY OCCURRING MATERIALS TO CREATE AN INTEGRATED RESTORATION LANDFORM WITH NATURE CONSERVATION HABITATS AT COOKS HOLE QUARRY AND THORNHAUGH LANDFILL SITE, LEICESTER ROAD, THORNHAUGH, PETERBOROUGH

Report reference: AU/CH/SPS/1774/01/ES/FV
February 2024



Baddesley Colliery Offices, Main Road, Baxterley, Atherstone, Warwickshire, CV9 2LE
Tel. (01827) 717891 Fax. (01827) 718507

CONTENTS

1.	Introduction	1
2.	Pre-application advice, scoping and approach to the Environmental Impact Assessment	3
	Pre-application advice	3
	Scoping and approach to the Environmental Impact Assessment	3
3.	The site location and description	8
4.	Summary of the proposed development	12
5.	Phasing of the operations	16
	Cooks Hole	16
	Thornhaugh	17
6.	Restoration proposals and Biodiversity Net Gain	20
	Landform	20
	Afteruse	20
	Access	22
	Restoration soils	23
	Habitat Management and Monitoring Plan	23
	Biodiversity net gain	23
7.	Alternatives	25
	'Do nothing'	26
	Alternative uses for the materials arising from construction at ENRMF	27
	Alternative site design	28
8.	Ecology and biodiversity	29
	Methodology	29
	Baseline	31
	Baseline evolution	39
	Assessment of environmental effects and mitigation measures	39
	Residual and cumulative effects	47
	Conclusions	48

9.	Cultural heritage	49
	Methodology	49
	Baseline	50
	Assessment of environmental effects	51
	Mitigation	52
10.	Landscape and visual effects	54
	Introduction	54
	Methodology	54
	Baseline	55
	Baseline evolution	57
	Assessment of environmental effects	58
	Cumulative effects	60
	Mitigation	60
	Conclusions	61
11.	Flood risk assessment and surface water drainage	62
	Introduction	62
	Methodology	62
	Baseline	63
	Assessment of environmental effects	67
	Mitigation and monitoring	73
	Cumulative impacts	73
	Conclusions	74
12.	Traffic and transport	75
	Methodology	75
	Baseline	76
	Assessment of environmental effects	77
	Mitigation	78
	Cumulative impacts	78
	Conclusion	79
13.	Noise	80
	Methodology	80
	Baseline	81
	Assessment of environmental effects	82

	Cumulative impacts	82
	Mitigation	83
14.	Amenity including dust	84
	Methodology of the dust assessment	84
	Baseline	85
	Assessment of environmental effects	87
	Mitigation and monitoring	90
	Cumulative impacts	91
	Conclusions	91
15.	Conclusions	92

TABLES

Table ES2.1	A summary of the issues raised in the Scoping Opinion and a description of the way in which the issues are addressed in the Environmental Impact Assessment and the Environmental Statement
Table ES4. 1	Description of the currently approved development for Cooks Hole Quarry and Thornhaugh Landfill Site and the proposed changes as a result of the proposed development
Table ES4.2	Mitigation measures identified in the Environmental Statement for the proposed development
Table ES5.1	Status of the rights of way and permissive paths which currently cross Cooks Hole and Thornhaugh
Table ES11.1	Capacities of the surface water detention basins as part of the proposed surface water management system at the site following restoration
Table ES13.1	Compliance noise monitoring results
Table ES13.2	Assessment of noise associated with short term operations
Table ES13.3	Assessment of noise associated with normal operations
Table ES14.1	Summary of the dry hours wind data for 2000 to 2019 from the Wittering weather station located approximately 2.2km north north west of Cooks Hole and Thornhaugh

Table ES14.2 Summary of potential dust disamenity effects at specific receptors within 400m of the application boundary without operational controls in place

Table ES14.3 Dust control measures which will be implemented at Cooks Hole and Thornhaugh

FIGURES

Figure ES1.1 The site location (drawing reference AU/TH/02-24/24185)

Figure ES1.2 The planning application boundary (drawing reference AU/TH/02-24/24186)

Figure ES2.1 Locations of the developments considered in the cumulative impact assessment (drawing reference AU/TH/02-24/24187)

Figure ES3.1 Aerial photograph of the sites taken in 2020 (drawing reference AU/TH/02-24/24188)

Figure ES3.2 The currently consented phases of Thornhaugh Landfill Site (drawing reference AU/TH/02-24/24189)

Figure ES3.3 Public rights of way and permissive rights of way at different stages of the development (drawing reference AU/TH/02-24/24190)

Figure ES4.1 The proposed restoration profile (drawing reference AU/TH/02-24/24191)

Figure ES4.2 The proposed phasing of the operations at the sites (drawing reference AU/TH/02-24/24192)

Figure ES4.3 Restoration plan for Cooks Hole Quarry and Thornhaugh Landfill Site (DBLC drawing reference 2402_008.006_THORN036_Restoration Plan Rev 0)

Figure ES6.1 Cross sections through the existing ground levels and the permitted and proposed restoration contours (drawing reference AU/TH/02-24/24193)

Figure ES6.2 Proposed amenity access design (ADC drawing reference ADC3418-DR-002-P2)

Figure ES8.1 Habitat map for Cooks Hole (ESL drawing reference MJCA125-L032-008)

Figure ES8.2 Habitat map for Thornhaugh (ESL drawing reference MJCA125-L032-007)

Figure ES9.1 Cross section of the topographical survey carried out by MJCA on 15 and 22 November 2023, proposed restoration and current permitted restoration levels (drawing reference AU/TH/02-24/24194)

Figure ES10.1 Site context, landscape character, designations and viewpoint locations (DBLC drawing reference 2401_008.006_FIG1_Site Context & VP Locs rev 0)

Figure ES11.1 Current and proposed surface water management infrastructure (drawing reference AU/TH/02-24/24195)

Figure ES14.1 Location of dust sensitive receptors within 400m of the site boundary (drawing reference AU/TH/02-24/24196)

APPENDICES

Appendix ES1.1 Approved restoration scheme for Cooks Hole Quarry (Figure 4.9 Rev B)

Appendix ES1.2 Approved restoration scheme for Thornhaugh Landfill Site (drawing number TLS6)

Appendix ES1.3 Approved restoration landform profile for Cooks Hole (Drawing number C28/8/20/207 Rev E)

Appendix ES2.1 Pre application advice September 2023

Appendix ES2.2 Scoping Request and Scoping Report

Appendix ES2.3 Scoping Opinion provided on 23 November 2023

Appendix ES2.4 Statement of Competence

Appendix ES2.5 Developer's Statement

Appendix ES4.1 Surface Water Management Scheme

Appendix ES4.2 Lighting Scheme

Appendix ES4.3 Tree Protection Scheme

Appendix ES4.4 Soil Handling and Management Scheme

Appendix ES4.5 Noise Monitoring Scheme

Appendix ES6.1 Biodiversity Net Gain Plan

Appendix ES6.2 Completed statutory metric for the consented restoration scheme

- Appendix ES6.3 Completed statutory metric for the proposed restoration scheme
- Appendix ES8.1 Ecological Impact Assessment
- Appendix ES9.1 Heritage Statement
- Appendix ES10.1 Landscape and Visual Impact Assessment
- Appendix ES11.1 Flood Map for Planning
- Appendix ES11.2 Greenfield runoff calculations
- Appendix ES11.3 Detention basin catchment area calculations
- Appendix ES12.1 Transport Statement
- Appendix ES13.1 Noise Impact Assessment
- Appendix ES13.2 Noise Compliance Monitoring
- Appendix ES14.1 Dust Assessment Methodology
- Appendix ES14.2 Wind rose for Wittering Airfield 2000-2019
- Appendix ES14.3 Beaufort Wind Scale

This report has been prepared by MJCA with all reasonable skill, care and diligence, and taking account of the Services and the Terms agreed between MJCA and the Client. This report is confidential to the client and MJCA accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known, unless formally agreed by MJCA beforehand. Any such party relies upon the report at their own risk.

1. Introduction

- 1.1** Augean South Ltd (Augean) operates the existing Cooks Hole Quarry and Thornhaugh Landfill Site. Cooks Hole Quarry (Cooks Hole) is a mineral extraction site which has been active since the 1950s. Thornhaugh Landfill Site (Thornhaugh) has been operational since the 1990s. Thornhaugh accepts a range of non-hazardous waste and stable non-reactive hazardous waste including asbestos which is used to restore the previous mineral workings. Throughout this report, when referred to collectively, Cooks Hole Quarry and Thornhaugh Landfill Site will be called 'the sites'. The sites are located approximately 1km south west of the village of Thornhaugh and 10km west of Peterborough. Cooks Hole is to the south west of the A47 Leicester Road and Thornhaugh is adjacent to and south of the A47 Leicester Road. The sites boundaries and locations are shown on Figure ES1.1.
- 1.2** The sites have a complex planning history and have been worked by various operators however the overarching principle of both sites is to restore them to a beneficial after use. The approved restoration scheme for Cooks Hole is to a low level and comprises agricultural grassland with some tree and shrub planting. The approved restoration profile for the north eastern corner of Cooks Hole is to return the land to original ground levels. The approved restoration scheme for Thornhaugh comprises a mixture of woodland, hedgerows, shrub and scrub and calcareous grassland. The currently approved restoration schemes for the sites are presented at Appendix ES1.1 and ES1.2 respectively. The restoration landform profile for Cooks Hole which is shown on the restoration scheme presented at Appendix ES1.1 has been superseded and the current profile which has been approved is presented at Appendix ES1.3.
- 1.3** Augean is proposing to revise the restoration schemes for Cooks Hole and Thornhaugh to provide an integrated, coherent landform for both sites. The proposed restoration scheme would extend the habitats from Thornhaugh to Cooks Hole so that a wider mix of habitats is available across both sites. In addition there is the potential for the restoration to tie in with wider aspirations for the enhancement of Rockingham Forest, to create green infrastructure links with Bedford Purlieus and for the proposals to contribute to landscape scale recovery.
- 1.4** The material that will be used to create the proposed landform at Cooks Hole will comprise clean, naturally occurring materials. Only clean naturally occurring

materials which have been extracted as part of the existing landfill construction operations and will be extracted as part of the future construction operations for the landfill at the East Northants Resource Management Facility (ENRMF) in Kings Cliffe and as part of the landfill construction operations at Thornhaugh will be used. It is proposed that only material arising from the construction operations at Thornhaugh and ENRMF will be deposited in Cooks Hole. Some of the additional landfill void created at Thornhaugh will be filled with waste types already consented for disposal there. The creation of the proposed landform at Cooks Hole and its integration with the restoration scheme for Thornhaugh will facilitate the continued operation of ENRMF which is a Nationally Significant Infrastructure Project by utilising the material that arises during the construction operations of the landfill cells.

- 1.5** This Environmental Statement accompanies a single planning application for the revised restoration profile for Cooks Hole and Thornhaugh. The planning application includes the continuation of the mineral processing operations at Cooks Hole and the continuation of the existing operations at Thornhaugh (construction of phases, landfilling and processing of waste) as described in Section 4 and 5 of this report. It is proposed that the existing planning permissions will be superseded on granting of a new planning permission. The planning application boundary is shown on Figure ES1.2.
- 1.6** MJCA is commissioned by Augean to prepare the planning application and undertake an Environmental Impact Assessment and to prepare this Environmental Statement for the proposed development at Cooks Hole and Thornhaugh. Further details on the approach to the application are presented in Section 2 of this report.

2. Pre-application advice, scoping and approach to the Environmental Impact Assessment

Pre-application advice

2.1 Pre application advice was sought from Peterborough City Council (PCC) through their formal pre-application advice procedure in May 2023. Two meetings were held with PCC including a site visit with the Council Ecologist and Conservation Officer. Pre-application consultation responses were provided by the statutory consultees to the Planning Department. The formal written pre application advice was received in September 2023 and is presented at Appendix ES2.1.

2.2 The pre-application advice states that it is necessary for the application to be supported by an Environmental Statement, Flood Risk Assessment, sustainable drainage strategy, tree survey, biodiversity checklist and survey, heritage statement, transport assessment, noise and vibration assessment and air quality assessment. The scope of these assessments were considered further in the scoping report.

Scoping and approach to the Environmental Impact Assessment

2.3 The Environmental Impact Assessment (EIA) of the proposed development has been undertaken in accordance with EU Directive 2011/92/EU¹ on the assessment of the effects of certain public and private projects on the environment (as amended by EU Directive 2014/52/EU²) and in accordance with The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended)³ (the 2017 EIA Regulations). Guidance produced by the Department for Communities and Local Government regarding EIA has also been considered.

2.4 The fundamental principles of EIA are embodied in EU Directive 2011/92/EU (as amended by EU Directive 2014/52/EU) in which it is stated that:

‘...policy on the environment is based on the precautionary principle and on the principles that preventative action should be taken, that

¹ Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment.

² Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment

³ The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended)

environmental damage should, as a priority, be rectified at source and that the polluter should pay.'

2.5 In EU Directive 2011/92/EU (as amended by EU Directive 2014/52/EU) it is stated that effects on the environment should be taken into account at the earliest possible stage in all technical planning and the decision-making process.

2.6 The 2017 EIA Regulations specify the projects that will and the projects that may be the subject of an EIA. Schedule 2 of the 2017 EIA Regulations lists the projects for which it may be necessary to undertake an EIA. The proposed development falls under development description 13a and 13b of Schedule 2 of the 2017 EIA Regulations which states:

'(a) Any change to or extension of development of a description listed in Schedule 1 (other than a change or extension falling within paragraph 24 of that Schedule) where that development is already authorised, executed or in the process of being executed.

(b) Any change to or extension of development of a description listed in paragraphs 1 to 12 of column 1 of this table, where that development is already authorised, executed or in the process of being executed.'

2.7 The existing developments have previously been subject to Environmental Impact Assessments under the EIA Regulations. As there is the potential for the proposed development to have significant effects on the environment an EIA is necessary.

2.8 In accordance with good practice the scope and level of detail of the information provided in the Environmental Statement (ES) was determined in consultation with statutory consultees and Peterborough City Council (PCC) planning department. A Scoping Report was prepared including a plan sufficient to identify the land, a brief description of the nature and purpose of the proposed development and the proposed scope of the EIA including an explanation of the likely significant effects of the proposed development. A request for a Scoping Opinion together with the Scoping Report was submitted to PCC on 13 October 2023. A copy of the request for a scoping opinion and the Scoping Report are provided at Appendix ES2.2. A Scoping Opinion was provided by PCC on 23 November 2023 and is presented at Appendix ES2.3 together with the responses from the consultees.

2.9 As a result of the scoping process it has been determined that an assessment of the potential effects of the proposed development associated with ecology and biodiversity, landscape and visibility, cultural heritage, water resources, flood risk, traffic and transport, noise, amenity and dust and climate change are assessed as part of the EIA. It was agreed that assessment of the potential effects of the proposed development associated with population and human health, soils and agricultural land quality, buried archaeology, vibration, traffic noise, traffic air quality, groundwater and major accidents could be excluded from the scope of the ES. A summary of the issues raised in the scoping opinion and a description of how they have been addressed in the EIA and presented in the ES is presented at Table ES2.1.

2.10 It is necessary as part of the EIA to consider the potential for cumulative impacts. The construction and operation of major developments within 5km of the site have been considered where necessary in the technical assessments. The approximate boundaries of the sites are shown on Figure ES2.1. The developments which have been considered are summarised below.

No	Site name	Planning permission reference and date that planning permission was granted	Comments
1	Thornhaugh II	M25/1/3 – M25/1/6 (97P0071) 8 February 1999	Conditions 1-10 and 22 and 23 apply to all 3 ownerships. The operations of winning and working of minerals and the deposit of mineral waste have to cease no later than 21 February 2025. It is understood that operations in the main part of Thornhaugh II ceased a number of years ago.
		APP/J0540/A/12/2179541/NWF 8 May 2013	Recycling of residual waste and infilling up to ground levels (approximately 6 hectares of Thornhaugh II). The development had to commence by May 2016.
2	Thornhaugh IIB	14/01716/MMFUL 10 April 2015	5 year operation to extract 700,000 tonnes of limestone and restore the site to ground levels with imported inert materials. The operations had to commence by 2021 and be completed by 2026.

No	Site name	Planning permission reference and date that planning permission was granted	Comments
3	Cross Leys Quarry Leicester Road	19/01530/WCMM, 10 December 2020 19/01370/WCMM 10 December 2020 19/01365/MMFUL 10 December 2020	Restoration of quarry workings to agriculture and woodland through the importation and deposit of inert restoration materials and quarry waste. Operations had to commence by December 2023 and it is stated that the operations are anticipated to be completed in 7 years.
4	A47 Wansford to Sutton	Development Consent Order 2023 (S.I. 2023 No. 218) 17 February 2023	Various highway works including dualling the A47 from the Wansford eastern roundabout for 2.6km and improvement of the on/off ramps for the A1. The works have to commence within 5 years of the date of the grant of the order (ie by February 2028).
5	East Northants Resource Management Facility (ENRMF)	Development Consent Order (SI 2023 No.110) 23 January 2023	Hazardous waste and LLW waste landfill and waste treatment and recovery facility with restoration to nature conservation habitats. The operations are ongoing. The operations have to cease at the site by 31 December 2046.

2.11 This document comprises the ES which has been prepared in accordance with the 2017 EIA Regulations. In this ES the information which has been collated, the results of the investigations, the proposed development and the results of the EIA are presented. The positive and negative effects of the proposed development are explained. In accordance with Regulation 18(5)(a) of the 2017 EIA Regulations a statement is provided at Appendix ES2.4 outlining the relevant expertise and qualifications of those who have carried out the EIA and prepared the Environmental Statement in order to confirm their competence to carry out the work. In accordance with Regulation 18(5)(b) of the 2017 EIA Regulations a statement by the applicant confirming that the Environmental Statement has been prepared by competent experts is also provided at Appendix ES2.5.

- 2.12** The EIA has been based on discussions with Augean, statutory consultees and the experience of MJCA together with specialist technical advice. In summary this ES includes a description of the main development, an outline of the main alternatives studied, a description of the aspects of the environment which have the potential to be significantly affected by the development, a description of the likely significant effects of the development on the environment and a description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.
- 2.13** The baseline studies include desk studies and site surveys and provide the basis against which the assessments of environmental impacts are made. The impacts are assessed against the baseline conditions described as a result of the baseline studies taking into consideration the design and operational procedures for the proposed development together with the restoration proposals. For each impact subject area, a description and justification of the assessment procedure is presented together with an evaluation of the significance and scale of impact. The assessments have been undertaken by competent experts as set out in Appendix ES2.4. A non-technical summary of the ES is provided as a separate document.
- 2.14** Consultation has been undertaken with the local community in respect of the proposals and a summary of the consultation undertaken prior to the submission of the application is presented in a Statement of Local Engagement which is presented as an appendix to the Planning Statement.

3. The site location and description

- 3.1** The sites are located approximately 10km west of Peterborough and 1.7km west of the A1. The nearest villages to the sites are Thornhaugh which is located approximately 1km to the north east of the sites beyond the A47, Wittering located approximately 2km to the north of the sites and Yarwell located more than 2km to the south east of the sites. Cooks Hole is centred on National Grid Reference (NGR) 505207 299747 and is bordered by Thornhaugh to the north and by the A47 Leicester Road to the north east. Beyond the site boundary there are agricultural fields and scattered residential buildings. Immediately to the south of Cooks Hole lies an unrestored former quarry known as Thornhaugh II Quarry beyond which is Kings Cliffe Road which runs between the villages of Wansford and Kings Cliffe. To the south of Kings Cliffe Road are agricultural fields and woodland blocks. Immediately west of Cooks Hole Quarry is Old Oundle Road and Bedford Purlieus woodland (Figure ES1.2). Old Oundle Road is a Public Highway with no cars permitted. Thornhaugh is centred on NGR 504902 300111 and is bordered to the north by the A47 Leicester Road, to the south by Cooks Hole and to the west by Old Oundle Road and Bedford Purlieus woodland. Beyond the site boundary to the north are scattered residential properties and agricultural fields. Bedford Purlieus is an ancient woodland designated as a Site of Special Scientific Interest (SSSI) and a National Nature Reserve (NNR) (Figure ES3.1).
- 3.2** Cooks Hole comprises an active mineral extraction site which is approximately 53 hectares. Ironstone, sandy limestones, silty sands and clays have been extracted from the site since the 1950s. The mineral extraction operations are now complete at Cooks Hole and no further mineral will be extracted. There are a number of stockpiles of mineral materials at Cooks Hole and there is mobile plant active at the site which is currently processing the material from the stockpiles and those materials arising from the construction operations at Thornhaugh (Figure ES3.1). There are also a number of soil stockpiles. An area in the north of Cooks Hole adjacent to the boundary with Thornhaugh is used to stockpile materials arising from the construction operations at Thornhaugh.
- 3.3** Thornhaugh comprises an active landfill site which is being filled in phases (Figure ES3.2). Thornhaugh is approximately 30.5 hectares. The northern and north eastern phases of Thornhaugh have already been landfilled and are restored albeit that the

planting is not yet well established. Phase 7C has recently been constructed, construction of Phase 2 West will commence imminently and Phases 4B South, 5 and 7A are filled and awaiting capping. Thornhaugh Landfill Site is the subject of an Environmental Permit which is issued and regulated by the Environment Agency. Access to Thornhaugh is from the A47 Leicester Road. The site access is shared by Cooks Hole. A surfaced access road, site reception and welfare facilities, a weighbridge and wheel wash, landfill gas flare, hi pod storage area and car parking areas are located generally centrally within Thornhaugh. The access to Cooks Hole is to the east of the site entrance (Figure ES3.2).

- 3.4** The topography of the sites is varied due to the historical and ongoing operations with the ground level falling generally to the Thornhaugh Brook which runs through Cooks Hole generally from west to east. The Thornhaugh Brook rises to the west of Bedford Purlieus woodland and flows to the east to join the White Water Brook which is a tributary of the River Nene.
- 3.5** The geology at and in the vicinity of Cooks Hole comprises the Lincolnshire Limestone Formation which is underlain by the Grantham Formation and the Northampton Sand Formation. The central part of the site comprising the Thornhaugh Brook Valley is underlain by the Grantham Formation. The Northampton Sand Formation is underlain in turn by the Whitby Mudstone Formation (formerly referred to as the Upper Lias). Groundwater is present generally in the Grantham Formation and Northampton Sand Formation and in the base of the Lincolnshire Limestone underlying the site. Groundwater in the vicinity of the site is abstracted for domestic water supply and agricultural use and provides base flow to local rivers and streams. The Thornhaugh Brook is fed by groundwater including from Cooks Hole Spring located adjacent to Cooks Hole Farmhouse. Settlement ponds for mineral wash water are located in the south eastern corner of Cooks Hole.
- 3.6** The geology in the vicinity of Thornhaugh comprises the Lincolnshire Limestone Formation which in turn is underlain by the Grantham Formation and Northampton Sand Formation. In parts of the site the sequence has been replaced partly with backfilled material comprising reworked material from the Lincolnshire Limestone Formation and Grantham Formation. The Northampton Sand Formation is underlain by the Whitby Mudstone Formation (formerly referred to as the Upper Lias). The strata dip gently to the east at and in the vicinity of Thornhaugh. To the north, east

and south of the site the Lincolnshire Limestone Formation, Grantham Formation and Northampton Sand Formation are cut by several valleys.

- 3.7** Cooks Hole Farmhouse and outbuildings are located in the centre of Cooks Hole adjacent to the Thornhaugh Brook. The buildings are surrounded by dense vegetation and are owned by Augean. The property has been uninhabited for some time and is uninhabitable in its current state. Cooks Hole Farmhouse is a Grade II Listed Building. Beyond the sites there are 3 Grade II listed buildings to the north of the sites, the closest being Home Farm House approximately 80m from Thornhaugh and 540m from Cooks Hole. The Home Farm House group of buildings includes a barn and stable. There are also four listed buildings located to the east of the sites. Sibberton Lodge is a Grade II* listed building which is approximately 495m from Cooks Hole and 940m from Thornhaugh. Sibberton Lodge is surrounded by four Grade II buildings which include a barn, a cottage and stables (Figure ES1.2).
- 3.8** The nearest residential properties to the sites which are not listed are located to the north of the A47 Leicester Road and include Thornleigh House (45m) and Bedford Lodge (70m). Toll Cottage is located approximately 40m north west of Thornhaugh (Figure ES1.2). Oaks Wood Cottage is located approximately 290m to the north of the sites and beyond the A47 Leicester Road. Nightingale Farm is located approximately 335m to the south of Cooks Hole. Leeds Gate Farm is located approximately 630m south west of Cooks Hole Quarry.
- 3.9** There is a network of Public Rights of Way (PRoW) in the vicinity of the sites as shown on Figure ES3.3. Footpath Thornhaugh No. 3 Section 3 and Section 4 runs between Thornhaugh and Cooks Hole in an east to west direction before turning north on Old Oundle Road and then turning west to run through Bedford Purlieus. Thornhaugh Footpath No. 4 Section 1 currently runs along the southern boundary of Cooks Hole before turning north west along the A47 Leicester Road and then turning north east and running towards Thornhaugh village. Thornhaugh Footpath No 4 Section 1 originally ran through the centre of Cooks Hole through the area of the buildings associated with Cooks Hole Farmhouse before turning east north east towards the A47 before being diverted to its current route. Thornhaugh Footpath No 2 Section 2 which ran generally from south to north through the centre of Cooks Hole is currently stopped up. The diversion of Thornhaugh Footpath No 4 Section 1 and the stopping up of Thornhaugh Footpath No 2 Section 2 remain in force until 2042.

Thornhaugh Footpath 2 which ran through Thornhaugh is currently diverted to follow Thornhaugh Footpath No 3 Section 4. The PRoW in the vicinity of the site including the original routes, diversions and the potential new permissive footpaths are shown on Figure ES3.3.

- 3.10** Barnack Hill and Holes Special Area of Conservation (SAC) is located approximately 4.5km to the north east of the sites (Figure ES1.1). Bedford Purlieus located adjacent to the western boundary of the sites is designated as an ancient woodland, a Site of Special Scientific Interest (SSSI) and a National Nature Reserve (NNR). Several other SSSIs (West, Abbot's and Lound Woods SSSI, Wansford Pasture SSSI and Old Sulehay Forest SSSI) are located in the vicinity of the sites but are located more than 500m from the sites and are shown on Figure ES1.1. Phase 4A of Thornhaugh is a designated County Wildlife Site as it supports amphibians including Great Crested Newts. Thornhaugh, Bedford Purlieus and Thornhaugh II are designated as brownfield biodiversity sites (Figure ES1.1). Cross Leys Quarry to the west of Thornhaugh is also designated as a brownfield biodiversity site.
- 3.11** Based on the Environment Agency Flood Map for Planning Thornhaugh is located in Flood Zone 1. Flood Zone 1 is defined as land having a less than 1 in 1,000 annual probability of river or sea flooding. The majority of Cooks Hole is located in Flood Zone 1 except a small area in the vicinity of Thornhaugh Brook that passes through Cooks Hole which is in Flood Zones 2 and 3. Flood Zone 2 is defined as land having between a 1 in 100 and a 1 in 1,000 annual probability of river flooding. Flood Zone 3 is defined as land having a greater than a 1 in 100 annual probability of river flooding.
- 3.12** The RAF base at Wittering Airfield is located approximately 3km to the north west of the northern boundary of Thornhaugh at its closest point. The sites are located in the Aircraft Safeguarding Zone for Wittering Airfield.
- 3.13** The only mains service to the sites is water. Power is provided by site generators and foul sewage is collected in a cess pit at Thornhaugh.

4. Summary of the proposed development

4.1 As stated previously there is a complex planning history associated with the sites. A description of the currently consented activities at the sites is presented at Table ES4.1 together with a description of the intended changes as a result of the proposed development. The application boundary shown on Figure ES1.2 covers an area of 83.5 hectares. A summary of the main elements of the proposed development at the sites is presented below based on the detailed descriptions in Table ES4.1:

- The continuation of landfilling at Thornhaugh with non hazardous waste and stable non-reactive hazardous waste. No new landfill cells additional to those that are already permitted will be consented as a result of the proposed development. Up to 120,000 tonnes per annum of non hazardous waste and stable non-reactive hazardous waste will continue to be imported. The currently consented void remaining at Thornhaugh Landfill Site is approximately 1,310,000m³ and the maximum additional waste void created at Thornhaugh as a result of the proposed development is approximately 920,000m³.
- Continuation of the extraction of mineral to facilitate the construction of the permitted landfill cells at Thornhaugh. The cells which are consented but which have not yet been constructed are shown on Figure ES3.2.
- The continuation of stockpiling of materials imported to Thornhaugh for use in landfill engineering operations.
- Amendment of the restoration profiles for Thornhaugh and Cooks Hole to form one integrated, coherent landform. The proposed restoration profile is presented on Figure ES4.1. The elevation of the highest point of the restoration landform at Thornhaugh (71.5m Above Ordnance Datum (AOD)) will not change as a result of the proposed changes to the restoration profile.
- Continuation of the use of the existing Thornhaugh access from the A47 for the importation of waste for deposition at Thornhaugh, material for use in landfill engineering at Thornhaugh and material for use in the restoration of Cooks Hole.
- The importation of in the order of 1.2 million m³ of clean, naturally occurring excavated material from ENRMF to create the landform of Cooks Hole and to tie in with the landform at Thornhaugh. This volume of material to be imported from

ENRMF includes clay for use in landfill engineering at Thornhaugh. On average approximately 80,000m³ of material will be imported per annum from ENRMF. The maximum amount of material that it is anticipated will be imported per annum from ENRMF will be 150,000m³.

- The placement of restoration material and restoration of completed areas will be carried out in a phased manner. The proposed phasing of the operations at Cooks Hole and Thornhaugh is presented on Figure ES4.2. The restored landform to the south of Thornhaugh Brook will be created first.
- The continuation of processing of materials from mineral stockpiles at Cooks Hole and processing of minerals arising from the construction of the landfill cells at Thornhaugh.
- The continuation of crushing and screening of imported soil forming materials and minerals arising from the construction operations at Thornhaugh. It is anticipated that up to 28,000 tonnes of material will be imported per annum.
- The continued extraction and redeposition or processing of historically deposited waste from Phases 1 and 2 at Thornhaugh as consented by the Environmental Permit for the landfill site.
- The continuation of the export of up to 10,000 tonnes per annum of material from the recycling, recovery and waste processing operations for reuse or disposal at an appropriate facility.
- There are no proposals to increase the numbers of HGV movements compared with historical traffic movements associated with the operations of the site.
- As is the case currently, during the operation of the sites haul roads will be constructed as necessary.
- As is the case currently, during the operation of the sites the site reception facilities including the welfare facilities which comprise portable cabins will be relocated as necessary to accommodate the phased activities.

- As is the case currently, the retention of the site management infrastructure at Thornhaugh for the continuation of monitoring and the management of landfill gas and leachate.
- The retention of Cooks Hole Farmhouse and the associated outbuildings for the duration of the operations at the sites. Proposals for the future use of the listed building and associated outbuildings will be the subject of a separate planning application.
- Continuation of the operations at the sites until the completion of restoration by 21 February 2042.
- During the operation of the sites surface water will be managed consistent with the current operations at Cooks Hole and continue to be managed in accordance with the Environmental Permit at Thornhaugh.
- The establishment of a post restoration surface water runoff management system at the sites as an integrated part of the design of the site restoration profile and restoration scheme. The principles of the surface water management system for the restored Thornhaugh site including the surface water attenuation ponds will remain generally as currently consented. Detention basins will be created in Cooks Hole to manage the rate of discharge from the sites of surface water. The calculations for the attenuation capacities of the detention basins are presented at Appendix ES4.1
- The restoration of the sites will be to nature conservation interest and the habitats currently included in the approved restoration scheme at Thornhaugh will be extended to the south to include and be integrated with Cooks Hole. The revised restoration scheme for Cooks Hole will deliver significant biodiversity net gain compared with the previously consented restoration scheme. The restoration plan is presented at Figure ES4.3. Further details on the restoration are presented in Section 6 of this report.
- The sites will be subject to an aftercare and maintenance period following the completion of restoration. The length of the aftercare period will be 30 years consistent with the requirements for Biodiversity Net Gain under the Environment Act 2021.

- The use of the access from the A47 at Cooks Hole for amenity access following restoration and the provision of a small car park for approximately 12 cars (Figure ES4.3).
- 4.2** There will be no changes to the principles of the landfilling operations at Thornhaugh as a result of the proposed development. The landfilling operations at Thornhaugh will continue to be the subject of an Environmental Permit. The Environmental Permit specifies the types of non hazardous wastes and stable non reactive hazardous waste which are permitted for deposition at the site as well as the detailed measures necessary for the containment, management and monitoring of the wastes and the surrounding environment.
- 4.3** The mitigation measures that will be implemented at the site to ameliorate any potential impacts are presented in Table ES4.2.

5. Phasing of the operations

- 5.1** The proposed development will be undertaken in a series of phases which are presented on Figure ES4.2. The operations will be undertaken concurrently in Cooks Hole and Thornhaugh. The habitats that are currently in place at Cooks Hole which will be removed as part of the proposed development will remain in place as long as possible during the operations and will be removed when operations move into that phase. The current status of the footpaths within the site is summarised in Table ES5.1 and the footpaths are shown on Figure ES3.3.
- 5.2** Prior to or at the commencement of the operations, taking into account seasonal constraints, further vegetation will be established and fenced as appropriate on the restored north and north eastern phases in Thornhaugh adjacent to the A47 (Phases 3, 6A and 6B).

Cooks Hole

- 5.3** The restoration operations will commence in the area to the south of Thornhaugh Brook. As part of the works in Phase A the new ponds and hibernacula will be established to form an ecological area. Groups of scrub and shrubs will be planted on the western boundary of Cooks Hole and in groups between the ponds as shown on the restoration scheme provided at Figure ES4.3. On completion of the establishment of the ecological area a hedgerow will be established on the eastern boundary of the area to minimise access by people in order to protect the sensitive habitats that will be encouraged to develop here. Operations will then be undertaken from east to west in Phases B and C and the surface water detention basins will be established as the operations progress (Figure ES4.3). As the operations progress in the area to the south of Thornhaugh Brook the new permissive right of way will be installed. The initial section of the permissive footpath route will run eastwards from Old Oundle Road on the southern boundary of Cooks Hole before turning northwards between the southern boundary of Cooks Hole and Thornhaugh Brook (Figure ES3.3). On this section the permissive route will follow the same route as the reinstated Footpath Thornhaugh No 2 Section 2 before turning eastwards to follow the route of Thornhaugh Brook. It is anticipated that the material placement and restoration operations in the area to the south of Thornhaugh Brook (Phases A to C) will be completed in 3 to 5 years. On completion of the restoration operations the permissive right of way will be opened.

- 5.4** The material placement and restoration operations will continue to Phase D on the western boundary of Cooks Hole to the north of Thornhaugh Brook. The new ecological habitats shown on Figure ES4.3 will be established in this area. Groups of scrub and shrubs will be planted on the western boundary of Cooks Hole and in groups between the ponds. On completion of the establishment of the ecological area a hedgerow will be established on the eastern boundary of the ecological area to minimise access by people in order to protect the sensitive habitats that will be encouraged to develop here. The ecological area will be fenced as necessary. The material placement and restoration operations will generally be undertaken from south to north in each phase. It will be necessary to close Footpath Thornhaugh No 3 Section 3 and Footpath Thornhaugh No 3 Section 4 as the operations progress. The stone wall which currently runs adjacent to Footpath Thornhaugh No 3 Section 3 and 4 will be removed and the stones will be used to create a new wall adjacent to the reinstated footpath in the restored site. Footpath Thornhaugh No 3 Section 3 and 4 will be diverted temporarily to follow the new permissive route to the south of Thornhaugh Brook. The currently diverted Footpath Thornhaugh No 4 Section 1 route via Footpath Thornhaugh No 2 Section 1 will remain accessible throughout the operations and following restoration.
- 5.5** The operations in Cooks Hole will then progress to Phase F on the eastern boundary adjacent to the A47. Following the placement of material in Phase F the operations will then progress in a west to east direction from Phases G to J. The phases will be restored progressively as the placement of materials to final ground levels is completed. Once the planting is carried out it will be fenced as necessary to minimise the risk that the young vegetation is eaten by deer.

Thornhaugh

- 5.6** The landfilling operations will continue generally in the landfill phasing order shown on Figure ES4.2. The operations will be completed in Phase 4C and Phase 7C and then progress in turn into Phase 2 West, Phase 2 East, Phase 1 West, Phase 1 East and Phase 7B (Figure ES4.2). The phases will be constructed to form engineered landfill cells and then filled, all in accordance with the Conditions of the Environmental Permit. Consistent with the currently approved operations as part of the landfill construction operations in Phases 2 and 1 it will be necessary to remove waste which was deposited in historically authorised un-engineered landfill areas. This historically

deposited waste will be directly transferred to the newly engineered cells for deposit. Where the excavated wastes comprise natural materials or generally inert construction and demolition waste that is suitable for recovery, the waste will be tested, sorted and recovered for reuse where possible. Any waste treatment activities (comprising physical treatment including sorting and crushing) will be carried out in accordance with the Environmental Permit as is the case currently. Where appropriate the materials will be exported off site for use. The waste processing operations will be located within the Thornhaugh permit boundary and will be undertaken using appropriate mitigation and monitoring measures as specified in the Environmental Permit.

- 5.7** In order for the restoration landform at Thornhaugh to tie in with the landform at Cooks Hole it is necessary for further waste to be placed in the current landfill phases prior to the placement of the restoration materials. The placement of additional waste will be undertaken in all the landfill phases which currently remain uncapped. Restoration materials will then be placed over the progressively capped landfill cells in restoration phases E, H1, H2, K, L, M, N, O, P and Q (Figure ES4.2). As with all sequential phased filling and material placement operations such as proposed, the completion of adjacent phases will overlap. This overlapping will be particularly evident in the phases adjacent to each other in Cooks Hole and Thornhaugh.
- 5.8** Depending on operational circumstances at the time, it may be practicable to complete the restoration operations in Phase K earlier in the phasing order so that the restoration operations on the boundaries are completed sooner than scheduled. Such opportunities to restore areas sooner than scheduled will be implemented where possible.
- 5.9** As the landfilling operations progress in the central area of Thornhaugh it will be necessary to relocate the wheel wash and site reception facilities. The facilities will be relocated to a suitable alternative location within the Thornhaugh boundary. The access road from Thornhaugh to Cooks Hole will be relocated as necessary once the landfilling construction operations commence in Phase 1 East.
- 5.10** As the final restoration operations are completed, Footpath Thornhaugh No 3 Section 3 and Footpath Thornhaugh No 3 Section 4 will be reinstated as well as Footpath Thornhaugh No 4 Section 1, Footpath Thornhaugh No 2 Section 2 and Footpath

Thornhaugh No 2 together with the new permissive footpaths as shown on Figure ES3.3.

6. Restoration proposals and Biodiversity Net Gain

- 6.1 The currently approved restoration schemes for Cooks Hole and Thornhaugh are presented at Appendices ES1.1 and ES1.2. The restoration plan for the proposed development is shown on Figure ES4.3 and cross sections through the proposed restoration landform are shown on Figure ES6.1.

Landform

- 6.2 The currently consented landforms for Cooks Hole and Thornhaugh comprise two discrete landforms which are separated by Footpath Thornhaugh 3 Section 3 and Section 4. The currently approved restoration profile for Cooks Hole comprises a landform which slopes down towards Thornhaugh Brook from the south and then raises up from Thornhaugh Brook to the north up to Footpath Thornhaugh 3 Section 3 and Section 4 at a ground level of between 47mAoD to 57mAoD. The approved restoration profile for the north eastern corner of Cooks Hole is to return the land to original ground levels. Thornhaugh Brook is located in a valley feature. The currently approved restoration profile for Thornhaugh comprises generally a domed shape with a high point of 71.5mAOD. The existing Thornhaugh profile has been designed in accordance with the best practice for landfill restoration in order to maximise rainfall runoff and minimise rainfall infiltration.
- 6.3 The proposed integrated landform retains the valley feature through which Thornhaugh Brook flows with the ground to the north of the brook at a ground level of 47mAoD rising gently to the same high point level at Thornhaugh of 71.5mAOD. The slopes are retained on the flanks of Thornhaugh so that water is shed from the surface of the landform. The gradients from south to north for the restored landform in Cooks Hole are between 1v:8h and 1v:10h. The gradients on the flanks of the landform in Thornhaugh are between 1v:9h and 1v:15h from south to north, 1v:6h to 1v:16h on the eastern flanks and 1v:6h to 1v:10h on the western flank. The slopes of the restored landform are designed to vary to create local features which result in a more natural profile and which will provide further ecological benefits.

Afteruse

- 6.4 The approved restoration profile for most of Cooks Hole is to a level which is below the original ground level prior to mineral extraction and the restoration scheme comprises agricultural grassland with some tree and shrub planting. The approved

restoration scheme for Thornhaugh comprises a mixture of woodland, hedgerows, shrub and scrub and calcareous grassland.

- 6.5** The habitats that will be established at Cooks Hole comprise waterbodies, woodland, shrub and scrub, open scrub, hedgerows, calcareous grassland and neutral grassland together with hibernacula and areas of bare ground. An area will also be established for nesting sand martins. The habitats at Thornhaugh will remain consistent with those that are currently consented so will comprise a mixture of woodland, hedgerows, shrub and scrub and calcareous grassland.
- 6.6** As the areas of site operations and restoration are phased, existing habitats will be removed gradually and the creation of similar or improved habitats for sensitive and protected species will also be phased such that there will be a range of suitable habitats on site at any one time to accommodate the protected species that are known to use the sites as explained further in Section 8.
- 6.7** Development of the habitats will directly benefit wildlife such as amphibians, reptiles, invertebrates and mammals and provide connectivity for these fauna. The proposed restoration scheme principles follow the principles agreed for Thornhaugh. Discussions have been held regarding the restoration scheme with Peterborough City Council ecologists, Rockingham Forest Vision and Natural England.

Grassland areas

- 6.8** In Cooks Hole neutral grassland and calcareous grassland will be established. In Thornhaugh calcareous grassland will be established. The grassland/plant mixes will be selected to include plenty of pollen/nectar supplying flowers for the important invertebrates. The grassland areas will be managed primarily by seasonal mowing. In areas where there is a mix of scrub and grassland a band of taller grass will be left around the edges of the scrub patches which will provide over-wintering habitat for invertebrates, cover for reptiles and an area into which woody plants can spread, achieving the longer-term aim of developing a natural open woodland.

Woodland/scrub/hedge planting

- 6.9** Mixed scrub will be planted in blocks of varying size and density throughout the restored sites. The mixed scrub will comprise a minimum of three native species with no one species comprising more than 70% of the scrub. Species could include but is not limited to hawthorn, hazel, crab apple, field rose, purging buckthorn, dogwood and wild service tree.
- 6.10** As with mixed scrub, woodland planting will be undertaken throughout the restored areas and will comprise a minimum of five native tree species per woodland block. This includes species such as English oak to tie-in to adjacent woodlands, field maple, small leaved lime, wayfaring tree, wild service tree, silver birch, elder, hawthorn, hazel and purging buckthorn.
- 6.11** Hedgerows will be planted throughout the restored sites to link up areas of woodland and scrub planting. These will comprise a minimum of five native hedgerow species per 30m of hedgerow length.

Waterbodies

- 6.12** Twelve ponds will be created in the GCN conservation area of Cooks Hole Quarry. These ponds will be planted up with a diverse range of marginal, emergent and aquatic plants. The waterbodies have been sized so that they are unlikely to be attractive to flocking birds that could pose a hazard to aircraft using RAF Wittering. These waterbodies are planted for habitat creation purposes whereas the detention basins are designed to provide catchment areas in response to rainfall events. Detention basins are designed to remain dry or with limited water for most of the time in order that sufficient freeboard is maintained to accommodate runoff as and when it occurs.

Access

- 6.13** Public access to the restored sites is included in the restoration scheme. A number of rights of way which have been historically diverted with be reinstated across restored sites and a number of new permissive paths will also be established to provide circular walks around the site. A permissive path will be established adjacent to the A47 to allow walkers to walk inside the boundary of the sites rather than on the highway verge.

- 6.14** A small car park for up to 12 cars will be established at the former Cooks Hole entrance. It has been demonstrated that an access can be re-established at this location with appropriate visibility for cars. The surface of the car park will be formed of suitable aggregate material. The proposed access design is presented at Figure ES6.2. In the future a track may be established to Cooks Hole Farmhouse from the access point. A maintenance and monitoring access will be retained at the existing Thornhaugh entrance. This retained maintenance access will provide sufficient space for one vehicle to leave the A47 and obtain access to the sites via a 5 bar gate.

Restoration soils

- 6.15** Following the completion of the landform to the appropriate levels, between 1m (for areas of grassland) to 1.5m (for areas of woodland over the landfill site) of soil forming materials will be placed over the placed restoration materials prior to vegetation planting. All the soils that are currently stockpiled on Cooks Hole will be used in the restoration of Cooks Hole. Soil forming materials for Thornhaugh will be sourced from suitable material received through the gate which will also be processed as necessary in order to achieve the specification required for the placed growing medium.

Habitat Management and Monitoring Plan

- 6.16** A Habitat Management and Monitoring Plan will be submitted to the Local Planning Authority in response to an appropriately worded planning condition. Details of the species that will be planted are provided in the Biodiversity Net Gain Plan presented at Appendix ES6.1. The Habitat Management and Monitoring Plan will set out how the habitats will be managed over 30 years from the establishment of the habitats and describe the monitoring methods which will be used for each habitat type.

Biodiversity net gain

- 6.17** The restoration scheme for Cooks Hole has been designed to meet the objective of achieving Biodiversity Net Gain (BNG). The BNG for Thornhaugh is consistent with the current restoration scheme. BNG is defined as development that leaves biodiversity at the development site in a better state than it was before the development took place or in the case of an already approved development, a better state than the currently consented restoration scheme.

6.18 The habitat creation and biodiversity enhancement proposals are set out in detail in the Biodiversity Net Gain Plan presented at Appendix ES6.1. The BNG has been calculated using the statutory Biodiversity Metric. The completed calculations for the consented and proposed restoration schemes based on the approved metrics are presented at Appendix ES6.2 and Appendix ES6.3 respectively. The proposed measures will provide a BNG of over 104% for habitats and over 124% for hedgerows. The calculated net gain is substantially above the target of 10% which is specified in the Environment Act 2021. Mandatory BNG comes into force for planning applications submitted from 12 February 2024. The Biodiversity Net Gain Plan will be submitted to the Council for approval under an appropriately worded condition on grant of planning permission.

7. Alternatives

7.1 In this section of the ES the options and alternatives considered during the development of the final proposals are explained. In accordance with Schedule 4 of the 2017 EIA Regulations a description of the reasonable alternatives considered is provided in this section. The alternatives considered as relevant to the proposed development and its specific characteristics comprise:

- 'do nothing';
- alternative uses for the materials arising from construction works at East Northants Resource Management Facility (ENRMF) and Thornhaugh; and
- alternative site restoration designs.

7.2 The need for the proposed development and the exceptional circumstances which apply given the need for reliable, available accommodation of the excavation arisings from ENRMF in order to enable the continuation of that Nationally Significant Infrastructure Project (NSIP) are set out in the Planning Statement. ENRMF provides hazardous waste treatment and recovery facilities and a hazardous waste and low level radioactive waste (LLW) landfill. The site is nationally significant and serves the West Midlands, East Midlands, East of England, South East and Greater London. The current operations at ENRMF and the current operations at Thornhaugh are inextricably linked due to the inputs of treated wastes to Thornhaugh from the ENRMF waste treatment facility. Approximately 40% of the wastes deposited at Thornhaugh landfill arise from the ENRMF treatment facility. In addition, suitable engineering clay materials arising from the excavation works as part of the construction of landfill cells at ENRMF are transported to Thornhaugh and used in the construction of the engineered low permeability seals to the landfill cells at Thornhaugh.

7.3 As explained in the Planning Statement, in order to facilitate the continued nationally significant operations at ENRMF it is necessary to export 1.2 million m³ of naturally occurring clean material from ENRMF. The movement of materials arising from construction is not economical over anything other than short distances. Extensive enquiries over the last 5 to 10 years for developments which might need the material for construction or fill purposes have only identified an appropriate need within a cost effective distance for a small volume of the arisings. Excess material excavated to

date is stockpiled at ENRMF and there is a risk that if it is not used in the near future its continued presence will begin to affect the ability of the site to operate effectively. The ENRMF NSIP therefore requires a nearby, confirmed and available route for the entire volume of material which has been excavated and will be excavated in order for the development to be able to continue in accordance with the ENRMF Development Consent Order.

- 7.4** The export of material needs to be undertaken on a continual basis to facilitate the continued construction of the landfill cells in the western extension. As Augean have control of Cooks Hole the material can be imported to create the proposed landform as needed and there is only a short distance between the two locations. Without the material being used at an alternative site the operations at ENRMF could be delayed and the provision of a NSIP would be prevented due to the practical and planning restrictions on stockpiling on site while the construction, treatment, disposal and engineering operations are all taking place in parallel.

‘Do nothing’

- 7.5** It is considered good practice to consider the ‘do nothing’ option which relates to the evolution of the site environment without the implementation of the proposed development. If the proposed development did not occur the restoration of Cooks Hole to agriculture and woodland would be completed by February 2042. The landfilling operations and restoration of Thornhaugh to a mixture of woodland, hedgerows, shrub and scrub and calcareous grassland would be completed by the end of 2034 and the end of 2035 respectively. The restoration of the sites would comprise two independent landforms. The opportunity to provide significant biodiversity net gain in Cooks Hole and the potential to extend the range of habitats with a view to providing a significant contribution to the wider aspirations for the enhancement of Rockingham Forest would not be realised. The landfilling operations at Thornhaugh would continue to support the operations at ENRMF but an alternative solution would have to be found for the majority of the material arising from the construction operations at ENRMF to allow it to continue to operate. Extensive enquiries by Augean over the last decade and more have not identified suitable, timely solutions for the reuse of the materials to date.

- 7.6** The cessation of the operations at the sites would result in the loss of up to 5 jobs in 2035 once the operations in Thornhaugh are complete. The jobs will be secured for

a further 7 years if the proposed development proceeds. Traffic movements and plant movements associated with the existing operations would cease in accordance with the currently consented timescales.

Alternative uses for the materials arising from construction at ENRMF

- 7.7** A Development Consent Order was granted for the western extension to ENRMF in January 2023 and the construction of the first landfill cell in the western extension has now been completed. Approximately 1.2 million m³ of material needs to be exported from ENRMF which has been extracted during the construction operations to create the hazardous waste and LLW landfill in the western extension at ENRMF.
- 7.8** Over the last 10 years of operations at ENRMF Augean have investigated alternative uses for the material arising from the landfill construction operations. During the construction of the current and previous landfill cells Augean have only identified an appropriate need within a cost effective distance for limited quantities of materials arising from the construction operations. Material is exported for use as necessary at Thornhaugh for use in the construction of the landfill cells but there are currently still large quantities of naturally occurring material stockpiled at ENRMF that will not be used at either the operations at ENRMF or Thornhaugh.
- 7.9** The alternative uses for material from ENRMF in other projects is sensitive to distance and timescales. The material needs to be relocated from ENRMF regularly to allow the construction operations in the western extension to continue without restrictions and in accordance with the timescales that have been set out in the Development Consent Order. The movement of materials arising from construction is not economical over anything other than short distances. Whilst alternatives have and will continue to be investigated there is no guarantee that projects will arise within a suitable distance or timescale during the construction operations of the western extension at ENRMF. Without the material being used at an alternative site the operations at ENRMF could be delayed and the provision of a Nationally Significant Infrastructure Project would be prevented due to the practical and planning restrictions on stockpiling on site while the construction, treatment, disposal and engineering operations are all taking place in parallel.
- 7.10** Whilst material arising from the landfill construction operations at ENRMF could be exported to an inert waste landfill for disposal it would be utilising the landfill void that

could be being using by inert wastes rather than naturally occurring materials. In addition, the disposal rather than the re-use of the material is contrary to the waste hierarchy and the associated policies for its implementation.

- 7.11** The sites are located approximately 3.4km from ENRMF and are under Augean's control. As all three sites are controlled by Augean the material can be moved within the timescales necessary and there is certainty of provision and use. The proposed development provides the opportunity to create an integrated, coherent landform across the sites and to enable the continuation of the nationally significant operations at ENRMF.

Alternative site design

- 7.12** The landform and restoration design of the site has progressed as the findings of the Environmental Impact Assessment and the outcomes of consultation have been obtained and considered. The design process is iterative and numerous components of the site design change to a greater or lesser extent as the design process progresses to address issues identified. At the pre-application stage the restoration landform profile proposed would have necessitated the importation of more material than the final landform profile that is proposed in this application. As consultation responses have been received and the details of the proposed development have evolved, the landform profile has been amended to accommodate only the volume of material that will arise from the construction operations at ENRMF and the construction operations at Thornhaugh in Cooks Hole. The additional void created at Thornhaugh has resulted from tying the two landforms together in order to provide an integrated, coherent landform.

8. Ecology and biodiversity

- 8.1** An assessment of ecology and biodiversity has been undertaken by Ecological Services Limited (ESL). The ecology and biodiversity of the sites and the surrounding area have been examined extensively to facilitate an assessment of the potential impacts on flora and fauna as a result of the proposed development. Surveys have been undertaken including a preliminary ecological appraisal and a wide range of field surveys covering habitats and plant communities, invertebrates, amphibians, reptiles, birds, bats and badgers. A desk study has been undertaken including requests for data to local record centres and societies. Discussions have been held with consultees including Peterborough City Council and Natural England. The results of the baseline surveys, desk studies and consultations together with an explanation of the assessment methodology and an assessment of the potential impacts of the proposed development are presented at Appendix ES8.1 and summarised in this section.
- 8.2** In June 2023 a tree survey to BS 5837 was carried out over the sites. A detailed arboricultural impact assessment is presented at Annex 2 of Appendix ES8.1.
- 8.3** A Biodiversity Net Gain (BNG) assessment for the proposed development has been carried out to determine the gain which will be achieved. The BNG which will be delivered compared with the currently approved restoration schemes has been calculated. The BNG assessment is provided at Annex 3 of Appendix ES8.1. A draft Biodiversity Net Gain Plan is provided at Appendix ES6.1. The Biodiversity Net Gain Plan will be formally submitted to discharge the statutory biodiversity net gain condition following grant of planning permission.

Methodology

- 8.4** A desk study has been undertaken to identify internationally and statutorily designated sites within 5km and non statutorily designated sites within 2km of the sites using MAGIC⁴ and Natural England's Nature on the Map. The Cambridgeshire and Peterborough Environmental Records Centre (CPERC) and Northamptonshire Biodiversity Records Centre (NBRC) were asked to provide a data report on local sites of conservation interest including County Wildlife Sites (CWS) and Local Wildlife

⁴ Natural England (2023) MAGIC website <https://magic.defra.gov.uk/>

Sites (LWS) together with records for protected or notable species within 2km of the sites.

8.5 A Preliminary Ecological Appraisal (PEA) was undertaken in June 2023 including a survey of all habitats and plant communities within the sites. The habitat maps are presented at Figure ES8.1 and Figure ES8.2. The zone of influence for the development is the area over which ecologically valuable sites, habitats or species may be significantly affected by environmental changes resulting from the proposed project. It is not a set distance and is dependent on the sensitivity of the ecological features under consideration. As a result of the PEA it was confirmed that it was necessary to undertake habitat surveys including tree surveys, invertebrate surveys, great crested newt surveys, reptile surveys, breeding bird surveys, bat surveys, badger surveys, brown hare surveys and hedgehog surveys.

8.6 The following surveys were undertaken in 2023. The detailed methodology for each of the surveys is provided at Annex 1 of Appendix ES8.1.

- The PEA was undertaken in June 2023. The PEA extended over the whole area covered by the sites together with the edges of adjacent land where access was permitted.
- Invertebrate surveys were undertaken in April, July, August and September 2023. The initial survey in April 2023 was a scoping assessment and then full surveys of Cooks Hole and Thornhaugh and surveys of the wet woodland were undertaken in July to September 2023.
- All waterbodies within the site were surveyed for Great Crested Newts (GCN) between April to May 2023. Each waterbody was surveyed 6 times to enable a population size assessment.
- Seven reptile surveys using artificial refugia were undertaken between April to September 2023. 80 artificial refugia were placed in suitable areas.
- Six breeding bird surveys were undertaken between March and June 2023 and all birds seen or heard at the site or immediately adjacent land were mapped. During all survey visits, birds seen or heard were recorded. Surveys were undertaken following sunrise and on one occasion at dusk.

- The buildings in Cooks Hole were inspected for use by bats and all trees on site were examined for potential roost features. Activity surveys were undertaken for bats on five nights in June and July 2023.
- Badger activity signs were recorded on each site visit. Badgers are subject to protection under the Protection of Badgers Act 1992. The legislation aims to protect the species from persecution, rather than being a response to an unfavourable conservation status, as the species is in fact common over most of Britain. Accordingly the detailed information on sett locations and associated search records are not included in this report but will be provided in a separate confidential report where requested by statutory consultees as appropriate.
- Any sightings of brown hare and hedgehog were recorded on each site visit.
- In June 2023 a tree survey to BS 5837 was carried out over the sites.

8.7 Based on the information collected in the surveys and the desk based research the potential impacts of the proposed development were assessed and mitigation measures were prepared and incorporated into the design of the proposed development including for implementation prior to and during the site operations as well as integrated with the restoration proposals. The methodology for assessing the impacts on features of ecological and nature conservation interest are those set out in the relevant guidelines⁵. Further detail on the impact assessment methodology is presented at Appendix ES8.1.

8.8 Following the review of the data obtained during the desk study and surveys at the sites a number of species have been scoped out of the impact assessment. These are water vole and otter, hazel dormouse, brown hare, hedgehog and white clawed crayfish.

Baseline

Statutory and non-statutory sites and protected species records

8.9 The closest site in the National Sites Network as established in the Conservation of Habitats and Species Regulations 2017 (as amended) is Barnack Hills and Holes

⁵ *Guidelines for Ecological Impact Assessment in the UK and Ireland; Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management (CIEEM) 2018 (Version 2.1)*

Special Area of Conservation (SAC) which is located approximately 4.5km north east of the sites as shown on Figure ES1.1. Within 5km of the site there are six statutory ecological sites with the closest being the Bedford Purlieus Site of Special Scientific Interest (SSSI) and National Nature Reserve (NNR) located adjacent to the west of the sites as shown on Figure ES1.1. There are 17 non-statutory sites within 2km of the application boundary including the Thornhaugh Quarry County Wildlife Site (CWS) which is located in the south west of Thornhaugh Landfill Site to the west of the landfilled areas.

8.10 A number of records for protected species within 2km of the sites were identified during the desk based study. The records comprise:

- 53 records for great crested newts between 2005 and 2022 with the closest being the GCN in the Thornhaugh CWS located within the site boundary.
- 15 records for other amphibians between 2004-2021 including common frog, common toad, smooth newt and palmate newt the closest of which was in Bedford Purlieus to the west of the sites.
- 53 records for reptiles from 2004 to 2021 including common lizard, slow worm and grass snake the closest of which is within Bedford Purlieus.
- 33 records for badger from 2003 to 2020 including within the Thornhaugh CWS.
- 51 records for hazel dormouse between 2003 and 2015 with the closest in Bedford Purlieus.
- One record for harvest mouse within 1.1km of the sites.
- One record for brown hare 1.3km south of the sites.
- Two records for otters in 2007 in the River Nene 1.8km east of the sites.
- There are numerous records for at least 11 species of bats between 2003 and 2019 the closest being within Bedford Purlieus.
- Hundreds of records for at least 47 species of protected and priority birds between 2003 and 2022 including within Bedford Purlieus.

- Thousands of records for protected and priority invertebrates between 2003 and 2022 the closest being within Bedford Purlieus.
- Hundreds of records for protected and priority plants between 2003 and 2022 including within the Thornhaugh CWS.

Habitats, plant communities and species

- 8.11** The application boundary includes both Thornhaugh and Cooks Hole. Thornhaugh comprises an active landfill with unvegetated surfaces, capped and unrestored cells, haul routes and material storage areas as well as site reception facilities. There are fragments of early colonising ruderal vegetation between these areas in Thornhaugh and an area to the north adjacent to the A47 has been restored to grassland. The Thornhaugh Quarry CWS is located in the western side of Thornhaugh and comprises a mosaic of grassland interspersed with ponds and patches of bare ground. A chain of ponds is present to the north of the CWS which were created as part of great crested newt mitigation works.
- 8.12** Cooks Hole consists of a mineral extraction site and is separated from Thornhaugh by a gappy hedgerow with a haul road at the eastern end. The north east of Cooks Hole comprises large areas of bare ground with stockpiles and two water storage lagoons. In the north west of Cooks Hole there is a large area of agricultural grassland with a stockpile and large waterbody. Cooks Hole is spilt by Thornhaugh Brook running west to east through an area of wet woodland either side of the uninhabited Grade II listed Cooks Hole Farmhouse. Land to the south east of the brook is mainly bare ground with former agricultural grassland in the south west.
- 8.13** The wet woodland, ponds, open mosaic habitats on previously disturbed land and hedgerows present at the site qualify as S41 Habitats of Principal Importance under Section 41 of the Natural Environment and Rural Communities Act 2006 (as amended). The site is considered to be of County importance for habitats. No nationally rare or nationally scarce plant species or S41 Species of Principal Importance were recorded at the site. Three species present on site (pyramidal orchid, wild liquorice and common valerian) are listed as Cambridge and Peterborough Additional Species of Interest (CPASI). Four near threatened species (carline thistle, common eyebright, common valerian and field scabious) were recorded at the site however all but field scabious were located within the CWS or

boundary features which will not be affected by the proposed development. The site is considered to be of Local importance for plant species. No non native invasive plant species were recorded within the site.

Trees and hedgerows

- 8.14** There are no Tree Preservation Orders for the trees on site. The survey identified 3 large groups in proximity to Thornhaugh Brook which will be protected during the operations. The four tree groups in Thornhaugh will be protected and retained. The gappy hedgerow (shown as 4 parts in the tree survey) and small central tree group which separates Thornhaugh from Cooks Hole together with the hedgerow which runs from south east to north west in Cooks Hole will be removed as part of the development. The protection measures for the trees are set out in the tree protection scheme presented at Appendix ES4.3. Details on the timing for the removal of the trees is presented in Section 5 of the Environmental Statement.

Invertebrates

- 8.15** The sites comprise a range of habitats which support a significant total number of invertebrate species. The most prominent invertebrate habitat on site is short sward and bare ground which supports 81 species including 17 species with a nationally significant status. Tall sward and scrub habitat is also prominent on site with a total of 67 species of association recorded including two with a nationally significant status. The butterfly resource at the site is considered to be significant with two Section 41 species widespread across the site (dingy skipper and grizzled skipper). 68 species of ground nesting bees and wasps were recorded at the site including 14 with nationally significant status resulting in a diverse and robust population. The wet woodland present in Cooks Hole supports a range of habitats and the survey recorded 105 species of invertebrates. The number of wetland species is low with only 26 species of invertebrates recorded.
- 8.16** The sites support a moderately high number of invertebrates including a low number of localised and specialised species 15 of which have nationally significant status. The invertebrate assemblage is considered to be of County importance. The value of the wet woodland present at Cooks Hole is considered to be high and of District importance for its invertebrate assemblage. The wet woodland will not be affected by the proposed development as explained further below.

Amphibians

- 8.17** Work has been undertaken historically at Thornhaugh to translocate GCNs to the CWS located in the west of the site and to a receptor area with eight receptor ponds located to the north of the CWS. These ponds are separated from the rest of the sites by amphibian fencing. Population monitoring of the CWS and adjacent receptor ponds was undertaken from 2005 to 2019 which indicates that the population has varied but overall it is considered that there was a medium sized population present. 16 ponds within the sites which were surveyed for the presence of GCN during 2023. It was determined that the site supported three distinct GCN populations. There is a medium population of GCN across the ponds located in the CWS, the ponds to the north of the CWS and the pond in the north west of Cooks Hole. Two further small populations are present in the surface water management lagoon in the east of Thornhaugh and the mineral washing lagoons in the south east of Cooks Hole. In addition to great crested newts, palmate and smooth newts were found in the CWS and ponds to the north of the CWS and in the surface water management lagoon in the east of Thornhaugh and the pond in the north west of Cooks Hole. No frogs or toads were recorded at the site. The sites are considered to be of County importance for amphibians.

Reptiles

- 8.18** Previous surveys undertaken in 2009 and 2012 recorded slow worms and common lizards along the western edge of Cooks Hole adjacent to Bedford Purlieus and a 2011 survey found grass snake and common lizards to the south of Thornhaugh Landfill. In 2023 one grass snake was recorded under a survey tin at the western end of the central hedgerow between the sites and a common lizard was recorded in the restored grassland in the north of Thornhaugh.
- 8.19** Bedford Purlieus is known to support populations of common lizard, slow worm and grass snake and it is likely the reptiles present at the sites are part of this wider metapopulation. Given the levels of disturbance at the sites over the past 20 years the only suitable habitats for reptiles are the hedgerow between the two sites, habitats along the brook corridor in Cooks Hole and the area of restored grassland in the north of Thornhaugh. As a result of the species present at the site being Section 41 species of Principal Importance the site is considered to be of Local importance for reptiles.

Birds

- 8.20** Numerous bird species have been recorded at the site during previous site surveys with a total of 58 recorded during the six 2023 site visits. This included three Schedule 1 species comprising little ringed plover, red kite and redwing. The little ringed plover was confirmed to be breeding on Cooks Hole. The survey also noted ten species of principal importance including cuckoo and skylark in addition to eight Red List and 17 Amber List species and suitable nesting habitat is available within the sites. Whilst not currently believed to be of conservation concern a colony of sand martin were present in a spoil heap in Cooks Hole in such numbers that the sites can be considered to be of importance to the species.
- 8.21** Little ringed plover favour nest sites on transient areas of bare and sparsely vegetated ground such as those found in quarries, gravel pits and industrial sites with the availability and loss of such habitat having a direct effect on the population size. Studies on population size of little ringed plover in Cambridgeshire suggest the numbers present on site could represent at least 20% of the known breeding pairs in the County which would make the site of at least District and possibly County importance for the species. Suitable habitat for Little ringed plover will be available for the duration of the site operations as the material placement and restoration operations will be undertaken in phases.
- 8.22** Red kites were recorded on every site visit and were often seen over Thornhaugh. It is likely that Bedford Purlieu supports multiple breeding pairs and that competition has led to a pair nesting in the eastern end of the wooded brook valley in Cooks Hole. The site is considered to be of local importance to red kite. Whilst the sites support several Red and Amber list species of breeding birds the numbers are relatively small and typical of the habitats present. The site is considered to be of local importance for breeding birds. It is considered that larger areas of their preferred habitat will become present during the progressive restoration of the sites and that these new habitats will be able to carry an even greater number and range of species.

Bats

- 8.23** Surveys undertaken at the sites in 2023 did not identify any roosts however roosting opportunities are available at Cooks Hole Farmhouse and associated buildings and some mature trees along the brook corridor all of which will be unaffected by the

proposed development. As Thornhaugh is an active landfill foraging opportunities for bats are limited to pockets of habitat with poor connectivity internally and with the wider landscape. The most active area for foraging bats in Thornhaugh was the interface between the site and Bedford Purlieus. Thornhaugh is assessed as having 'low' suitability for commuting and foraging habitats, elevated to 'high' suitability along the boundaries. The open bare ground at Cooks Hole is unsuitable for foraging bats with the most active areas recorded as the brook corridor through the centre of the site and the interface with Bedford Purlieus to the west and to a lesser degree the two internal hedgerows at Cooks Hole. Cooks Hole is assessed as generally having 'low' suitability for commuting and foraging habitats, elevated to 'medium' suitability along the internal hedgerows and 'high' suitability along the brook corridor.

- 8.24** A total of eight bat types were identified to species level during the 2023 surveys in addition to bats from the *Myotis* genus which could not be identified to species level but are likely to be either Daubenton's bat or whiskered/Brandts bat. Bat activity elsewhere was generally low. Noctule bats were recorded in high numbers in June in proximity to the internal hedgerows. Noctule bats are not reliant upon linear landscape features for commuting or foraging hence the recorded activity levels are likely from short intense bursts of foraging activity in proximity to the detectors. Common pipistrelle activity was relatively high around Cooks Hole Farmhouse spread through the night so the records do not indicate that a roost is present.
- 8.25** Regular use of hedgerows on the sites including the central hedgerow was recorded by soprano pipistrelle, common pipistrelle and barbastelle with little evidence of commuting use by other species. Low levels of soprano pipistrelle, Nathusius' pipistrelle, Liesler's bat, barbastelle bat and the myotis bats were recorded primarily along the western boundary adjacent to Bedford Purlieus. Whilst brown long-eared bats are often underrepresented in acoustic surveys it is considered that the foraging opportunities within the sites will be limited to the western boundary with Bedford Purlieus as the species tends to be associated with woodland and edge habitats.
- 8.26** All bat species are protected under the Habitats Regulations and the Wildlife and Countryside Act 1981 (as amended) and barbastelle, noctule, soprano pipistrelle and brown long-eared bat are also S41 species. Most of the species recorded using the site are at relatively low levels. The most important habitats for bats on site (the brook corridor and western interface with Bedford Purlieus) will be unaffected by the

proposed development. Furthermore habitats that are lost during the operation of the sites will be replaced in far higher proportions upon restoration. Bats are likely to be resilient to the proposed development but the site is considered to be of Local importance for bats.

Dormice and other mammals

- 8.27** Hazel dormice were reintroduced to Bedford Purlieu in 2001 and monitoring of the species up to 2014 demonstrated its long term success. In addition a dormouse survey was undertaken at the site in 2009 which focused on the suitable habitat on the sites comprising the central hedgerow between the two sites. No evidence of dormouse was recorded. Given that the central hedgerow is now thin and gappy with poor habitat connectivity it is considered that no further surveys are necessary and that dormice can be scoped out of the assessment.
- 8.28** Fallow, roe and muntjac deer have been recorded within Cooks Hole and there is no operational requirement to exclude them from the active site. It is considered that deer can be scoped out of the assessment.
- 8.29** There has only been one record of brown hare since 2000 and there are no records of them ever being present at the sites. Given the low historic numbers and given that no brown hares were seen during the 2023 surveys it is considered that they can be scoped out of the assessment.
- 8.30** No records for hedgehogs were returned during the desk study and there are no records of them ever being present within the sites. It is considered that hedgehogs can be scoped out of the assessment.

Ecologically important features of the site

- 8.31** The following aspects of the proposed development are considered ecologically important features:
- The wet woodland that will be retained in the brook corridor in Cooks Hole is a Section 41 NERC habitat and a functional habitat providing feeding areas and shelter for a range of priority invertebrate species.

- The assemblage of amphibians on site including great crested newts which are a Wildlife and Countryside Act Schedule 5 species is sufficient to meet the selection criteria for a CWS.
- Little ringed plover, red kite and the assemblage of breeding birds present at the sites comprise Wildlife and Countryside Act Schedule 1 and Schedule 5 species.
- The habitats present on site provide feeding areas and shelter for a range of priority invertebrate species including two Section 41 NERC species of butterfly.
- The hedgerow network present at the sites supports a range of priority species by providing feeding areas and shelter.
- Use of habitats on the sites by Wildlife and Countryside Act Schedule 5 and Section 41 NERC species including bats and reptiles.
- Use of habitats on the sites by badgers protected under the Badgers Act, 1992.

Baseline evolution

- 8.32** It is necessary to outline the likely evolution of the baseline environment at the sites without the implementation of the proposed development. If the proposed revised restoration scheme was not approved and implemented then the operations would continue at Cooks Hole until 2042 and the operations at Thornhaugh would continue to 2035. Cooks Hole would be restored to agricultural grassland with some tree and shrub planting. Thornhaugh would be restored to a mixture of woodland, hedgerows, shrub and scrub and calcareous grassland. The opportunity to provide significant biodiversity net gain in Cooks Hole would not be realised. The potential to extend the range of habitats with a view to providing a significant contribution to the wider aspirations for the enhancement of Rockingham Forest as described in Section 6 would not be realised.

Assessment of environmental effects and mitigation measures

- 8.33** In terms of their potential for ecological impacts, the activities associated with landfilling, earthmoving and the placement of restoration material are similar during the construction and operational phases including the placement of restoration

materials and as they are likely to take place simultaneously in different parts of the sites during the development they are considered together.

Designated and locally important sites

8.34 Due to the distance from the site to the nearest National Network Site and the lack of potential pathways for significant effects, there will be no impacts on Barnack Hills and Holes SAC. There is the potential for the proposed development to affect four SSSIs namely Bedford Purlieus, West, Abbots & Lounds Woods, Bonemills Hollow and Wansford Pasture. Potential impacts could occur as a result of emissions to air and water, vehicle movements and impacts associated with the deposition of dust. The controls which will be implemented in order to minimise the potential impacts on water quality are described and assessed in Section 11 of this ES. The controls which will be implemented in order to control emissions of dust as a result of the placement of restoration soils are described and assessed in Section 14 of this ES. The assessment of impacts as a result of traffic are presented in Section 12 of this ES. Measures for the embedded protection of tree roots are an integral part of the design of the development. Only clean naturally occurring material will be placed in Cooks Hole and the landfilling operations in Thornhaugh will continue to be implemented and regulated by the Environment agency through the Environmental Permit. Accordingly it is concluded that there will be no adverse effect or a negligible adverse effect on any statutorily protected site.

8.35 No work will be undertaken within the Thornhaugh County Wildlife Site (CWS) in the south west of Thornhaugh. Currently there is amphibian fencing around the CWS which will be removed under an ecological watching brief when it is necessary to grade the adjacent land to the final restoration levels. There will be no effect or a negligible effect on the function or conservation status of the CWS. In the long-term, the restoration will provide new and enhanced links to existing habitats extending the capacity of Bedford Purlieus and Thornhaugh CWS to support notable species and contributing to conservation aims of Nature Recovery Networks within the wider Rockingham Forest area. This would be a major beneficial effect at a regional level.

Wet woodland

8.36 Wet woodland currently covers a length of approximately 390m of the approximately 1.5km long Thornhaugh Brook corridor through the sites. The whole length of the

corridor will be protected during the proposed development by the implementation of a Construction Exclusion Zone. Surface water will be managed in Thornhaugh and Cooks Hole during the operations and following restoration in accordance with the surface water management scheme which is presented at Appendix ES4.1. Measures to enhance the wet woodland will be included in the Habitat Management and Monitoring Plan which will be submitted to discharge an appropriately worded planning condition. In the short term, with the implementation of the protective measures, there will be a negligible effect on the function or conservation status of the wet woodland. In the long term, with appropriate management as proposed, the area of wet woodland can be increased which would benefit a range of species resulting in a moderate beneficial impact which would be significant at a District or County level.

Hedgerows

- 8.37** Two hedgerows with a total length of 835m will be lost in stages as a result of the proposed development. This will result in a temporary reversible loss of an important habitat that provides foraging opportunities for invertebrates and bats and provides nesting habitat for birds. Once the restoration of the sites is completed an overall total length of 3376m of species rich hedgerow will be planted. A total length of 500m of hedgerow will be planted in Phase A and 280m in Phase C as shown on the phasing plan at Figure ES4.2. The planting of the hedgerows in Phases A and C will take place in the first 3-5 years of the development and prior to the removal of the existing hedgerows from Phase D onwards. A 240m length of hedgerow will be planted in Phase D so no net loss will be exceeded within 7 years of commencement. The new hedgerows are likely to take 5 to 7 years to reach a functional state so the loss will vary from short to medium term for most species. Once the site is restored the overall length and quality of hedgerow will exceed that to be lost by 400%. The overall effect will be minor beneficial at the local level following restoration.

Grassland and scrub

- 8.38** With the exception of the area of the CWS, the currently restored areas on Thornhaugh, the Thornhaugh Brook corridor and around half the grassland in the proposed new newt conservation area in the south west of Cooks Hole, all other grassland and scrub within the sites will be disturbed during the development. This will result in a gradual, temporary but reversible loss of habitat that provided foraging

opportunities for all the species recorded using the site and breeding/nesting habitats for invertebrates and ground nesting birds. The progressive restoration will result in the creation of approximately 49 hectares of varied grassland including calcareous and neutral grassland. It is likely to take 2-3 years for the grassland to reach a functional state so the loss is likely to be short term for most species affected. The restoration of the sites will deliver approximately 11 hectares of mixed scrub. Once established, the overall area and quality of grassland and scrub will exceed that which will be lost. The grassland and scrub will provide terrestrial habitat connectivity for all of the groups/species recorded using the site with the greatest benefit for invertebrates and nesting birds. The predicted effect is assessed as being minor beneficial at the local level increasing to moderate beneficial at a District level once the habitats are established and under appropriate management.

Invertebrates

- 8.39** The phased operation of the sites will result in the gradual loss of grassland, scrub, hedgerows and areas of open mosaic habitats which in combination with the retained habitats are important to a broad range of invertebrates including two important butterfly species the dingy and the grizzled skipper. The phased operations at the sites will result in gradual, temporary but reversible loss of habitats that provide breeding, nesting and foraging opportunities for invertebrates with the greatest effects on more sedentary species and those with limited or specific food plants. The phased operation and restoration of the sites means that areas of key habitats will remain available throughout the development.
- 8.40** The retention of the CWS, brook corridor and boundary features will mitigate the effects of the temporary loss of areas of habitats during the operations. For the most notable species any effects are likely to be short-term; for example, key habitats for the dingy and the grizzled skipper lie within the CWS and restored area of grassland in the north of Thornhaugh neither of which will be disturbed. Further expansion of invertebrate populations will be temporarily limited until new habitats are established but viable populations will be maintained in readiness to colonise them. In the long term the mosaic of habitats which will be created as a result of the restoration will provide significant opportunities for the current assemblage of invertebrates to increase and for the sites to be colonised by new species. The new habitats will also extend the capacity of the adjacent Bedford Purlieu woodland to support notable

species. With appropriate long-term management (including that of the CWS and wet woodland), the effects on the invertebrate assemblage are predicted to be moderate beneficial at a District or County level.

Amphibians

- 8.41** Three ponds (Ponds 18, 19 and 20 shown on Figure ES8.1) will be destroyed during the development to enable the creation of the new landform. With the exception of the CWS, the wet woodland, the Thornhaugh Brook corridor and the currently restored areas on Thornhaugh, it is likely that all of the terrestrial habitat on the sites that is used by amphibians will be impacted at some point during the development. The mitigation strategy for amphibians including great crested newts (GCN) has been designed to enable Natural England to grant a licence on the grounds of Licencing Policy 1 – ‘Greater flexibility to dispense with exclusion and relocation activities where there is investment in habitat provision’, and Licencing Policy 3 – ‘Greater flexibility on exclusion measures where this will allow GCN to use temporary habitat’. Prior to the loss of any waterbody there will be a supervised drawdown of the water in the ponds and removal of any amphibians present. Prior to clearance of the ponds all high value nearby habitats will be assessed and hand searched where deemed necessary. In all cases amphibians will be recorded and released into place of safety.
- 8.42** With the exception of Ponds 18, 19 and 20 all other ponds will be retained and have been incorporated into the restoration plan. Twelve new purpose built ponds will be created; this provides a ratio of 4:1 for those lost which meets the compensation requirements of District Level Licensing. The ponds will be clay lined and will be planted with locally native species. The ponds will be located in a dedicated Conservation Area to be created in the south western corner of Cooks Hole, north and south of the brook, contiguous with the western edge of Bedford Purlieus and the Thornhaugh CWS in order to provide optimal habitat connectivity. The Conservation Area will be protected and separated from the rest of the sites by new species rich hedgerows. A gate will be installed to facilitate access for management purposes. The terrestrial habitats within the Conservation Area will comprise a mosaic of neutral/calcareous grassland with islands of scrub. A minimum of 12 hibernacula will be created comprising large piles of inert rubble and timber capped with membrane and turves. The grassland will be cut annually, late in the season to benefit invertebrates, and managed on rotation to ensure that there are always areas

of taller, undisturbed vegetation. Population size class assessments will be undertaken annually in order to monitor progress towards achieving favourable conservation status.

- 8.43** The south-western part of the Conservation Area will be created in Phase A, (the first 12-18 months of the development), with the north-western part following four to five years later during Phase D. There will be no barriers to movement so amphibians are free to colonise these areas at any point in time. Any adverse effects on amphibians are considered to be reversible and short-term. Once new habitats are established the overall long term effect is predicted to be moderate beneficial at the County level.

Reptiles

- 8.44** The sites are unlikely to be important to reptiles with suitable habitat currently limited to the hedgerow running east to west between Thornhaugh and Cooks Hole and the associated rough grassland either side. Habitats suitable for use by reptiles will undergo habitat manipulation in order that any reptiles present are able to disperse from these areas prior to vegetation clearance. Where necessary targeted searches will be undertaken in order to demonstrate that reasonable effort has been made to avoid killing and injury of reptiles and ensure legal compliance. The restoration will result in the creation of a habitat mosaic that will benefit reptiles, including ponds (for grass snakes), grassland for foraging and hedgerows for cover and connectivity with adjacent habitats, most notably Bedford Purlieus, encouraging the free movement of animals between these areas. In the short to medium term, the effects on reptiles are predicted to be neutral with no or negligible effect on function or conservation status. In the medium term reptiles will benefit as each phase of the restoration is completed. In the long term once new habitats are established the effect is predicted to be minor beneficial at a local level.

Birds

Little ringed plover

- 8.45** In 2023 two pairs of little ringed plover were confirmed as breeding within an area of bare ground in Cooks Hole. Little ringed plover are summer visitors to Britain and favour broken, sparsely vegetated ground which is the dominant habitat in the north and south eastern parts of Cooks Hole. Habitats suitable for use by little ringed plover

will be identified and studied for behaviour indicating active nest sites each spring annually commencing in the 2024 breeding season. This information will be relayed to site staff and an appropriate buffer zone will be set up to prevent damage to nests and avoid disturbance. Nest monitoring will continue at intervals until the young have fledged.

- 8.46** Prior to the loss of the 2023 breeding area six detention basins will be constructed to temporarily hold excess surface water during storm events and the basins will comprise bare ground left to colonise naturally. It is anticipated that some or all will be dry in the summer making the stoney, sparsely vegetated margins available for use by little ringed plover. There will be sufficient habitat at the site to support at least two breeding pairs at all times throughout the operations. In the short term the effects on little ringed plover are predicted to be neutral with no or negligible effect on function or conservation status. In the medium term (up to the completion of restoration of Cooks Hole), this species is likely to benefit annually as each phase of the restoration is completed. In the long term once new habitats are established the number of suitable nesting areas and the physical distance between them (which is important for a territorial species) may make it possible for the sites to support additional nesting pairs which would have a beneficial effect. The restoration has the potential to be moderate beneficial at a District level if the number of breeding pairs of little ringed plover resulted in a sustainable increase over time.

Sand martin

- 8.47** In 2023 a sand martin colony was present in a bank within Phase J2. Sand martins are summer visitors to Britain arriving in mid-March and nesting through to July. They nest in colonies excavating nest burrows in steep-faced banks of material often either the exposed face of an excavation or a stockpile. Such transient habitats are not infrequent on the sites and so future nesting attempts could be made anywhere where there is suitable habitat. Habitats suitable for use by sand martins will be identified and studied for behaviour indicating active nest sites each spring annually commencing in the 2024 breeding season and can be combined with that designed for little ring plover. This information will be relayed to site staff and an appropriate buffer zone will be set up. Nest monitoring will continue at intervals until the young have fledged.

8.48 The clearance of habitat suitable for use by sand martins will be undertaken outside the breeding season. New nesting provision for sand martins will be created in Phase D approximately five to seven years into the operations and before the nest site in Phase J2 that was used in 2023 will be lost. On the assumption that suitable habitats will be available for use by sand martins to return to the sites each year there will be no effect on their conservation status and the predicted effect is assessed as being neutral. In the long-term the restoration will increase the invertebrate biomass available for sand martins (and other insectivorous birds) potentially resulting in an increase in the survival rates and thus their populations. The effect is assessed as being minor beneficial at a local level.

Bats

8.49 Only the buildings at Cooks Hole Farmhouse and the mature trees along the brook corridor are assessed as currently suitable for use by roosting bats. None of these features will be affected by the proposed development and there is a sufficient buffer from the working areas that there will be no significant disturbance. There are other trees with potential for use by roosting bats but this can change over time due to use by other species such as woodpeckers. The majority of commuting and foraging activity currently takes place along the more productive and continuous wet woodland corridor and the site boundaries.

8.50 The planting of an overall total of 3,376m of species rich hedgerow will provide bats with acoustic markers to aid commuting routes and once established will attract more invertebrates and provide a valuable foraging resource. As features suitable for use by bats can be created quickly any trees subject to felling will be re-assessed in advance in accordance with best practice guidelines and appropriate mitigation measures will be implemented. In order to provide additional roosting opportunities for bats, bat boxes will be fixed to suitable trees. In addition, three pole mounted bat boxes will be installed close to ponds in the GCN Conservation Area.

8.51 A total of 12 new waterbodies will be created in Phases A and D before the surface water management lagoons are lost during Phases F and J3. This will ensure that there is a continual supply of drinking water for bats and other species. As the ponds mature, the invertebrate biomass will increase, providing a valuable foraging resource for all bat species. There will normally be no night-time working and the sites will not be floodlit outside working hours so bats will not be subject to disturbance

by light, noise or dust. If lighting is necessary for health and safety reasons, it will be directed downward to minimise light spill in accordance with best practice guidelines.

- 8.52** The restoration has been designed to maximise habitat connectivity both within the sites and between the sites and adjacent habitats in particular Bedford Purlieus. The significant increase in linear habitats such as hedgerows will result in a far more connected landscape than currently exists providing new flyways and commuting routes. The areas of new grassland, woodland and scrub planting will provide sheltered foraging opportunities. Once established the overall area and quality of these habitat will greatly exceed those to be lost. The phased approach will result in habitat loss and subsequent habitat creation taking place simultaneously over the years. As bats are highly mobile species they are likely to switch foraging areas quickly in response to food availability. In the short term bats are likely to be resilient to any effects. In the medium to long term the predicted effects are assessed as being minor beneficial at a local level potentially increasing to moderate beneficial at a District or County level if the bat boxes are occupied by a maternity colony of a scarcer species, such as barbastelle bat.

Biodiversity net gain

- 8.53** The habitat creation and biodiversity enhancement proposals are set out in detail in the Biodiversity Net Gain Plan which is presented at Appendix ES6.1. The BNG has been calculated using the statutory Biodiversity Metric. The proposed measures will provide a BNG of over 104% for habitats and over 124% for hedgerows. The calculated net gain is substantially above the target of 10% which is specified in the Environment Act 2021.

Residual and cumulative effects

- 8.54** The adverse effects of the proposed development can be mitigated in full by the implementation of the mitigation measures. There will be no residual adverse effects. There are no cumulative adverse ecological effects as a result of the proposed development. Following restoration the proposed development will have beneficial impacts on a range of species.

Conclusions

- 8.55** Replacement habitats for those that will be lost during the development are embedded within the design fully mitigating all adverse effects and providing additional enhancement with overall beneficial impacts. The proposed restoration will create a mosaic of woodland with shrubby edges, a large area of calcareous and neutral grassland, scattered trees, network of hedgerows, waterbodies and areas of open mosaic habitats. The proposed restoration will provide new and enhanced links to existing habitats and will extend the capacity of Bedford Purlieus to support notable species. This will contribute to the conservation aims of Nature Recovery Networks within the wider Rockingham Forest area. The proposed new and extended habitats will generate significant Biodiversity Net Gain in accordance with the Environment Act 2021 and is fully in accordance with both national and local nature conservation policy objectives.

9. Cultural heritage

9.1 An assessment of cultural heritage has been undertaken by Andrew Josephs Associates. As stated in Section 1 of this ES, the sites have been consented for and subject to mineral extraction operations since the 1950s. The soils and overburden at the sites have already been stripped so there is no potential for buried archaeology to be present. An assessment of buried archaeology therefore has been scoped out of the EIA and this assessment focuses on the potential impacts on the setting of designated heritage assets at and in the vicinity of the site as a result of the proposed development. This approach has been agreed in the Scoping Opinion provided by Peterborough City Council (Appendix ES2.3). The cultural heritage assessment is presented at Appendix ES9.1.

Methodology

9.2 A desk based study has been undertaken in accordance with The Chartered Institute for Archaeologists guidance⁶ and Historic England Guidance^{7,8,9} to provide an initial assessment of the potential impacts upon heritage assets within the site and the surrounding area that would result from the proposed development. The desk based study:

- Identifies and defines the extent of known heritage assets within the study area including the extent of the setting of the heritage assets;
- Makes a preliminary assessment of the potential for indirect effects on onsite and offsite designated heritage assets; and
- Assesses the potential impact of the proposed development on known heritage assets.

9.3 A search has been undertaken of the Historic England Archive and the DEFRA Magic database to obtain information on designated heritage assets such as World Heritage Sites, listed buildings and other buildings of architectural or historic importance,

⁶ *Standard and Guidance for Archaeological Desk-Based Assessment (Chartered Institute for Archaeologists 2008, revised 2012).*

⁷ *Historic England (2017) Good Practice Advice 3 – The Setting of Heritage Assets, 2nd edition*

⁸ *Historic England (2009) Planning Mitigation and Archaeological Conservation – Resource Assessment.*

⁹ *Historic England (2019) Statements of Heritage Significance (HEAN12)*

scheduled monuments, Conservation Areas, archaeological sites, battlefields, historic parks and gardens and historic landscapes.

- 9.4** The prediction of effects and the assessment of their significance is based on the guidance stated above and using the criteria set out in the relevant section of the Design Manual for Roads and Bridges¹⁰ and informed by professional experience. These are considered the most transparent methods available for heritage assessments. The details of the assessment methodology are presented at Appendix ES9.1.

Baseline

- 9.5** A study area of 500m from the application boundary was established as an appropriate distance to assess the potential effects upon the setting of designated heritage assets given the scale of the current operations and the screening effect of trees, topography and severance of the landscape caused by the A47. There are no scheduled monuments, World Heritage Sites, conservation areas, historic parks and gardens or historic battlefields within 500m of the sites. The nearest scheduled monument is Wansford Bridge which is 1.8km south east of the application boundary. There are three listed buildings within 500m of the sites comprising Cooks Hole Farmhouse located within Cooks Hole Quarry, the Home Farm group of buildings located approximately 90m north of Thornhaugh and the Sibberton Lodge group of buildings which are located approximately 500m east of Cooks Hole. Both the Home Farm and Sibberton Lodge groups of buildings are enclosed by mature planting which screens the properties from the sites. There is additional planting on the boundaries of the sites which obscures the operations at the sites. The Home Farm Group of Grade II buildings includes the farmhouse that was rebuilt by the Duke of Bedford on the site of the former hunting lodge (hence the name Bedford Lodge). Cooks Hole Farmhouse is situated in the Thornhaugh Brook valley and is set below the surrounding ground levels. The views of Cooks Hole Farmhouse are limited due to the surrounding planting and ground levels.
- 9.6** It is necessary to outline the likely evolution of the baseline environment at the sites without the implementation of the proposed development. If the revised restoration scheme was not approved then the operations would continue at Cooks Hole until

¹⁰ National Highways (2020) Design Manual for Roads and Bridges: LA104 Environmental Assessment and Monitoring

2042 and the operations at Thornhaugh would continue to 2035. Cooks Hole would be restored to low level agricultural grassland with some tree and shrub planting. Thornhaugh would be restored to a mixture of woodland, hedgerows, shrub and scrub and calcareous grassland. The settings of the heritage assets would continue to be affected as they are by the current operations. The currently consented restoration profiles would result in a deviations from historic ground levels. There would be no biodiversity net gain.

Assessment of environmental effects

- 9.7** As set out above due to the nature of the proposed development this assessment focuses on the potential impacts on the setting of designated heritage assets in relation to the proposed development. There will be no direct impacts on designated heritage assets as a result of the proposed development. The proposed revised restoration profile has the potential to cause an indirect impact on the setting of designated heritage assets.
- 9.8** As stated above there are three designated heritage assets within 500m of the site. The Home Farm group of buildings located approximately 90m north of Thornhaugh and the A47 is enclosed by trees which reduces visibility to and from the sites. There is a belt of mature and dense trees on the Thornhaugh boundary which further limits views of the sites from the designated buildings. The land at Thornhaugh closest to the Home Farm group of buildings has already been restored and the profile will not change as a result of the proposed development. It is considered that there will be no effect on the setting as a result of the proposed development.
- 9.9** The Sibberton Lodge group of buildings are located approximately 495m east of Cooks Hole and are surrounded by mature trees and lie to the north of the A47. There is also a belt of trees on the boundary of Cooks Hole. Due to intervening vegetation the revised restoration profile will not be visible from the buildings and there will be no effect on the setting of the asset as a result of the proposed development. There will be no impact upon the setting of listed buildings outside of the application boundary.
- 9.10** Cooks Hole Farmhouse is located within Cooks Hole Quarry and the proposed development will result in no changes to the ground levels in the immediate vicinity of Cooks Hole Farmhouse. The revised landform profile will result in an increase in

topography from the currently approved restoration by up to a maximum of 14m at the boundary with Thornhaugh (Figure ES9.1). The highest restoration level on Thornhaugh of 71.5m AOD will not change. The increased height of the topography will improve the views from the reinstated Footpath Thornhaugh No 3 Section 3 and 4 looking south towards Cooks Hole Farmhouse. There are limited views and wider appreciation of the surrounding land from the farmhouse due to the surrounding trees and the farmhouse being set down in the brook valley. The farmhouse has been surrounded by mineral working since the 1950s which has had a significant impact on the historic setting of the site. Following completion of the restoration of the site there will be no adverse effects upon the setting of Cooks Hole Farmhouse due to the natural appearance of the restored landform and its integration into the landscape.

- 9.11** It is considered that during the operations at the sites including restoration operations there will be a minor adverse impact on views from Cooks Hole Farmhouse however there will be no effect upon the appreciation of the heritage asset as the house is unoccupied and not currently visible from PRoW. The farmhouse will remain unoccupied until completion of the site operations. Following the completion of restoration it is considered that there will be no residual adverse effects on the setting of the asset or the ability to appreciate it. It is considered highly unlikely that a visitor would be able to recognise that the original setting of the farmhouse has changed given that the whole landscape surrounding the farmhouse has been worked or restored over a period of 100 years.

Mitigation

- 9.12** Whilst there are considered to be only minor adverse impacts during the operation of the sites and no residual impacts post restoration it is considered that the setting of Cooks Hole Farmhouse can be enhanced by the removal of some of the self set trees and ground vegetation which have established in the vicinity of the farmhouse to open up the land immediately in vicinity of the building and reduce any associated potential for damp in the building structure. Cooks Hole Farmhouse will be made watertight and secure to help prevent vandalism.

Conclusions

- 9.13** Due to the nature of the historic operations at the sites there is no remaining buried archaeology present.
- 9.14** There will be no impact as a result of to the proposed development on the setting of designated assets outside the application boundary due to the intervening vegetation and road infrastructure.
- 9.15** There will be minor adverse impacts on views from Cooks Hole Farmhouse during restoration operations but the farmhouse will remain unoccupied until the restoration operations are complete. There will be no effect on the appreciation of the significance of the asset during the restoration operations.. Following completion of restoration there will be no adverse effects on the setting of Cooks Hole Farmhouse due to the natural appearance of the restored landform and its integration into the landscape. No residual impacts will remain once restoration is complete. Public access to footpaths would be reinstated, with links through the countryside restored, such as south from Home Farm (the site of Bedford Lodge) and west from Sibberton Lodge, to Cooks Hole Farmhouse and beyond to Bedford Purlieus. New permissive footpaths to the south of Thornhaugh Brook will allow additional appreciation of Cooks Hole farmstead. The appreciation of views of Cooks Hole Farmhouse will be increased from the elevated reinstated Footpath Thornhaugh No 3 Section 3 and Footpath Thornhaugh No 3 Section 4.

10. Landscape and visual effects

Introduction

10.1 In this section the assessment of the effects of the proposals on landscape and visual receptors is presented. An assessment of the baseline landscape features and character of the sites and their environment, together with the baseline visibility of the sites from a range of representative viewpoints within the surrounding area has been undertaken in accordance with current guidance. An assessment of the potential effects of the proposed development on landscape and visual receptors undertaken by DB Landscape Consultancy Ltd is presented in the report at Appendix ES10.1.

Methodology

10.2 The Landscape and Visual Impact Assessment (LVIA) has been undertaken in accordance with the latest version of the Guidelines for Landscape and Visual Impact Assessment and Technical Guidance for Assessing Landscape Value Outside National Designations^{11,12}. The viewpoint photographs to support the LVIA have been taken in accordance with the latest Landscape Institute and Institute of Environmental Management and Assessment guidance¹³. The detail on the methodology followed is provided at Annex B of the report presented at Appendix ES10.1. The LVIA was carried out using combined site and desk based survey and assessment. The assessment is focussed on a study area with a 1.5km radius centred on the sites.

10.3 In line with accepted practice ten representative viewpoints and two photomontage viewpoints have been identified and selected based on professional judgement to help to define the existing visual baseline. These include views from sensitive receptors such as residents, amenity / recreation users such as PRow users and road users. These viewpoints were agreed with Peterborough City Council in November 2023. A field survey was carried out in November 2023 and photographs were taken from each of the representative viewpoints. The study area and viewpoint locations are shown on Figure ES10.1.

¹¹ Landscape Institute and Institute of Environmental Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment (Third Edition, GLVIA3)

¹² Landscape Institute (2021) Technical Guidance Note 02/21: Assessing Landscape Value Outside National Designations

¹³ Landscape Institute (2019) Technical Guidance Note 06/19: Visual Representation of Development Proposals

Baseline

- 10.4** The baseline for the LVIA comprises a study of the existing landscape receptors (landscape features/fabric and landscape character) relevant to the sites and surrounding areas and also of visual amenity. The baseline for the LVIA comprises the currently permitted operations at the site including the currently approved restoration schemes.

Landscape features

- 10.5** Landscape features are elements of the environment which contribute to the local character and setting of a site. The proposed development is for the amendment of the currently consented landform profile to create a coherent single integrated landform at Cooks Hole and Thornhaugh.
- 10.6** A tree and scrub belt which is between 20 to 30m wide and crosses the central part of Cooks Hole and forms part of the setting for a Grade II listed farmhouse and associated farm buildings will be retained. This tree belt follows the course of Thornhaugh Brook. The restoration landform to the north and south of the belt will tie-in to the existing ground levels to avoid disturbance to and protect the existing mature vegetation.
- 10.7** All of the other landscape features within the footprint of the landform will be removed in the areas that will be worked or restored including the hedgerow which runs adjacent to Footpath Thornhaugh No 3 Section 3 and Section 4, the blocks of scrub and woodland to the north and south of Footpath Thornhaugh No 3 and the hedgerow which runs north north west to south south east from the footpath to the north of Cooks Hole Farmhouse. Other than the hedgerow which runs adjacent to Footpath Thornhaugh No 3 Section 3 and Section 4 it was anticipated that these landscape features would be removed under the current planning permission meaning that their sensitivity to the proposed development is considered limited.
- 10.8** The sites do not lie within an area designated at a statutory /national or non statutory /local level for their landscape value or quality. At a national level the sites lie within National Character Area (NCA) 92: Rockingham Forest as defined by Natural England, which consists of an undulating landform rising to a prominent northern scarp with large woodlands forming a prominent feature on the skyline and remnants of unimproved grassland and medium-large arable and pastoral fields with low

hedges. The sites are both characterised by their generally industrial nature and there is a further site immediately to the south of Cooks Hole which has been subject to historical mineral extraction. The sites are bounded to the west by Bedford Purlieus.

- 10.9** These features are mainly considered to have generally low sensitivity to the proposed development due mainly to the existing operational context.

Landscape character

- 10.10** The sites lie within Landscape Character Area (LCA)2: Nassaburgh Limestone Plateau. The LCA broadly reflects the Rockingham Forest National Character Area comprising a gently undulating landscape with large blocks of woodland, large arable fields with low hedgerows or dry stone walls and well managed parklands. Other key characteristics are the many areas of high nature conservation interest, several active and disused quarries and the quiet rural ambience.

- 10.11** Within this LCA the sites extend across two landscape character sub areas: 1) Sub Area LCA 2b Burghley and Walcot Slopes; and 2) Sub Area LCA 2c Wittering Limestone Plateau. The south east and central part of Cooks Hole Quarry fall within Sub Area LCA 2b: Burghley and Walcot Slopes. The remainder of Cooks Hole Quarry and all of Thornhaugh Landfill falls within Sub Area LCA 2c Wittering Limestone Plateau.

- 10.12** The sensitivity of the landscape character of the area of the proposed development is considered to be low due to the existing operational context and the restoration baseline.

Visibility

- 10.13** The baseline visibility assessment addresses the extent and quality of views towards the sites available to a range of visual receptors including settlements/residents, amenity/recreation users (including PRoW users), road users and people at work.

- 10.14** The visibility of the sites from the surrounding area is primarily influenced by the vegetated boundaries and views into the sites are generally well screened. A well-established hedgerow runs alongside the A47 which extends all the way along the north eastern boundary of the sites which screens views from the north and north east. Bedford Purlieus woodland lies to the west and a hedgerow with trees runs to

the east of Old Oundle Road which filters views from the west. To the south the naturally revegetated vegetation on the boundary between Cooks Hole and Thornhaugh II Quarry screens the sites from views along Kings Cliffe Road further to the south together with the roadside vegetation.

- 10.15** The relatively level topography across the surrounding landscape means that intervening layers of vegetation and other features influence the quality and distance of views available from the surrounding area. Some features within the sites are higher than the surrounding vegetation such as the previously restored area within Thornhaugh and various temporary stockpiles and mounds which extend above the boundary and internal vegetation, so are partially visible from surrounding viewpoints.
- 10.16** The entrance to the sites from the A47 allows glimpsed views into the sites for people travelling along the A47. Footpaths passing through the sites allow good, relatively close-up views of parts of the Sites for walkers using the routes. The report presented at Appendix ES10.1 shows the representative viewpoints.

Baseline evolution

- 10.17** It is necessary to outline the likely evolution of the baseline environment at the sites without the implementation of the proposed development. If the proposed revised restoration scheme was not implemented then the operations would continue at Cooks Hole until 2042 and the operations at Thornhaugh would continue to 2035. Cooks Hole would be restored to agricultural grassland with some tree and shrub planting at a lower level than the proposed landform with the landform sloping up to Thornhaugh. The opportunity to provide significant biodiversity net gain in Cooks Hole would not be realised. Thornhaugh would be restored to a mixture of woodland, hedgerows, shrub and scrub and calcareous grassland at a maximum elevation of 71.5mAOD to form a domed feature. The individual sites would provide two landforms in the landscape which would be separated by a right of way. The landscape character of the site and the surrounding environs would not change. It is considered that the views of the site would remain generally consistent with the current baseline until the restoration of the sites is completed. The potential to extend the range of habitats with a view to providing a significant contribution to the wider aspirations for the enhancement of Rockingham Forest as described in Section 6 would not be realised.

Assessment of environmental effects

10.18 The predicted effects of the proposed development have been assessed with respect to the existing landscape features on and around the sites and the character of the local landscape and visual receptors. The detailed report is presented at Appendix ES10.1. The baseline for the LVIA comprises the currently permitted operations at the sites including the currently approved restoration schemes. The LVIA assesses the effects on landscape character and on visual receptors during the creation of the new restoration landform across Cooks Hole and the remaining landfill construction, infilling and restoration at Thornhaugh. Consideration is also given to the effects 10 years following the completion of restoration.

Effects on landscape features

10.19 The sites are active mineral extraction and landfilling operations so much of the land within the boundary of the sites is currently being worked, is unrestored or is otherwise degraded. The approved restoration schemes for the sites would result in the removal of some of the vegetation. The approved restoration scheme for Cooks Hole is for agricultural land with trees, shrubs and hedgerows and for Thornhaugh includes grassland, tree and shrub planting, hedgerows and reinstated footpaths. As a result of the proposed development the habitats that are currently approved for Thornhaugh will be extended to Cooks Hole resulting in significantly more tree and shrub planting on Cooks Hole and the creation of a number of waterbodies.

10.20 Whilst the landform will be higher in Cooks Hole than currently consented the changes across Thornhaugh will be very limited and it is considered that when assessed as a whole the differences will not be significant in the context of the currently permitted development. Effects on landform are assessed as resulting in a minor-moderate adverse which is not considered significant. The vegetation will be replaced in a phased programme in greater overall quantities as part of the proposed restoration scheme.

10.21 There will be limited effects on the footpaths during the operations when compared with the baseline. The footpaths which are already diverted or stopped up will remain diverted or stopped up until the operations are completed in 2042. It will be necessary for Footpath Thornhaugh No 3 Section 3 and Section 4 to be diverted once operations for the placement of restoration materials begin north of Thornhaugh Brook. An

alternative footpath route will be provided prior to the closure of the existing footpath. New permissive paths will be constructed at the site as part of the proposed restoration scheme. Following restoration there will be a benefit to users of the rights of way as there will be elevated views and additional paths to use.

Effects on landscape character

10.22 The landscape character of the sites is not considered highly valued or highly sensitive and consists of largely disturbed areas with some partially restored land with approved restoration schemes. The sensitivity of the landscape character at the sites to the proposed development is assessed as low. Effects on the landscape character of the sites is limited due to the existing context and setting. It is determined that the effects of the proposed development on landscape character would be limited during the operational period and there would be minor benefits to landscape character following restoration due to improved planting and enhancements to the rights of way network.

10.23 There will be negligible effects on the Landscape Character Areas 2 'Nassaburgh Limestone Plateau' (specifically LCA sub areas 2b and 2c) due to the small size of the sites in comparison with the overall area covered by these landscape character areas and the existing operational context (i.e. the landscape character of the proposed development is consistent with the landscape character of the permitted development).

Effects on visual receptors

10.24 The visibility of the site is restricted by the boundary hedgerow vegetation, the scrubby land to the south and Beford Purlieus to the west and there are limited properties with direct clear views of the sites. Only one receptor, users of the footpath which crosses the sites from east to west, will experience significant effects on visual amenity as a result of the proposed development. Footpath Thornhaugh No 3 Sections 3 and 4 will be closed for a number of years during the operations and reinstated once the sites are restored. The effects are significant as, in effect, the view is removed entirely for several years. Following reinstatement there would be a beneficial effect as there would be elevated views of the surrounding landscape from the footpath.

10.25 There will not be significant visual effects as a result of the proposed development for any other receptors including those from residential properties, road users or users of other rights of way when considering the existing context of the permitted development and the proposed development. Visual disruption will be experienced from several locations during the operations but these effects would be no higher than moderate adverse (Viewpoints 5, 6, 8 and 9 on roads and footpaths to the east and south east of the sites as shown on Figure ES10.1) at most and for a temporary period after which the restored areas will mature and integrate into the surroundings. On completion of restoration there will be significant biodiversity net gain which will benefit landscape features and character.

Cumulative effects

10.26 The potential cumulative effects associated with the five developments set out in Section 2 and shown on Figure ES2.1 have been considered in combination with the proposed development. Due to the distance between the sites and Cross Leys Quarry, the A47 highways works and ENRMF, there is no intervisibility between the sites and the other developments. The sites are currently operational facilities and the broad similarities between the proposed revised restoration landform and the permitted approved landform (no increase in maximum height or the nature of the infilling and earthworks to create the restoration landform) it is considered there will be no significant cumulative effects on either landscape or visual receptors.

10.27 There would be some cumulative effects on visual receptors during the operations at the sites and at Thornhaugh II located immediately to the south of Cooks Hole but these would be minor. On restoration of the sites and the other developments the cumulative effects would be beneficial for users of the A47, public rights of ways and for biodiversity,

Mitigation

10.28 The mitigation measures proposed to minimise the effects on landscape and visual receptors include the following:

- All soil placement operations will be carried out in accordance with the Institute of Quarrying Good Practice Guide for Handling Soils in Mineral Workings (2021).

- Removal of the sections of dry stone wall along Footpath Thornhaugh No 3 Sections 3 and 4 will be mitigated by the construction of a new wall adjacent to the reinstated footpath route, on the restored landform, as part of the restoration works
- The creation of additional permissive footpath routes when compared to the approved restoration scheme and an elevated route along Footpath Th No.3 Sections 3 and 4, which will offer more interesting views for users
- The proposed restoration scheme will result in significant overall biodiversity net gain when compared with the currently approved restoration schemes for Thornhaugh and Cooks Hole.

Conclusions

10.29 The proposed development will result in noticeable but limited adverse effects on landscape features, landscape character and visual receptors. There will be negligible impacts on landscape character as a result of the proposed development. The sites are well screened and there are limited receptors with clear views of the sites. The only significant effect as the result of the proposed development will be the loss of views from Footpath No 3 Sections 3 and 4 due to the temporary closure of the footpaths during the operational period. The footpaths will be reinstated following the completion of the operations. The proposed restoration scheme will result in significant biodiversity net gain which is beneficial for landscape features and character.

11. Flood risk assessment and surface water drainage

Introduction

11.1 An assessment of the potential impacts of the proposed development on surface water flow and flood risk at and in the vicinity of the sites has been undertaken by MJCA.

Methodology

11.2 The potential impacts of the proposed development in respect of flood risk have been assessed in accordance with the National Planning Policy Framework (NPPF) and the Planning Practice Guidance (PPG) to the NPPF. Consistent with the NPPF and the PPG on flood risk it is necessary to undertake a site specific flood risk assessment for all developments over 1ha in Flood Zone 1 and on all sites in Flood Zones 2 and 3 to demonstrate that the proposed development will be safe from flooding and will not increase the risk of flooding elsewhere. The currently consented restored landforms at Cooks Hole Quarry (Cooks Hole) and Thornhaugh Landfill Site (Thornhaugh) (collectively known as the sites) comprise the baseline situation against which the impacts of the proposed development on flood risk and surface water flows have been assessed.

11.3 The Peterborough Strategic Flood Risk Assessment (Peterborough SFRA) Level 1¹⁴ and the Peterborough Local Flood Risk Management Strategy 2015 – 2027 (Peterborough LFRMS)¹⁵ have been reviewed. Reference has been made as necessary when specifying sustainable drainage systems to the SuDS Manual CIRIA C753¹⁶.

11.4 The scoping opinion 23/00001/SCOP in respect of the development proposals was provided by Peterborough City Council on 23 November 2023 (Appendix ES2.3). It is stated that:

The Environment Agency have confirmed that no further groundwater assessments would be required, and it is accepted

¹⁴ Royal Haskoning DHV. (January 2018) Peterborough Level 1 Strategic Flood Risk Assessment & Outline Water Cycle Study. Report Reference WATPB5056R001F04.

¹⁵ Peterborough City Council. Undated. Peterborough Flood Risk Management Strategy (FMS).

¹⁶ Woods Ballard, B, Wilson, S, Udale-Clarke, H, Illman, S, Scott, T, Ashley, R, Kellagher, R (2015). The SuDS Manual. CIRIA C753. CIRIA. London

that assessments previously undertaken in 2015 for Thornhaugh and 2011 for Cook's Hole concluded there would be no significant risk to groundwater or surface water quality as a result of previously approved operations. The proposed scope focusing on surface water run off generation at the sites is therefore considered to be acceptable and consideration should be given to the potential effect of future climate change on the intensity of storm events.

- 11.5** In accordance with the agreed scope of the environmental impact assessment, the impacts of the completed development on groundwater levels, groundwater quality and surface water quality are not considered further. The potential impacts on surface water levels and surface water runoff generation are set out and assessed in the following sections. Mitigation measures to minimise the potential for the discharge of surface water runoff and substances during the operational phase of the proposed development are described in Section and Appendix ES4.1 and summarised below.

Baseline

- 11.6** The currently approved restoration scheme for Cooks Hole is presented at Appendix ES1.1. The currently approved restoration profile for Cooks Hole is presented at Appendix ES1.3. The landform drains generally towards the east in the direction of flow of the Thornhaugh Brook. The currently approved landform and restoration scheme for Thornhaugh is presented at Appendix ES1.2. The landform drains to a surface water management system through which runoff generated on the restored landform is conveyed to the newt ponds on the western boundary of Thornhaugh or into the surface water management ditch which runs on the northern and north eastern boundary of Thornhaugh to an attenuation lagoon on the north eastern boundary of Thornhaugh. The attenuation lagoon discharges via a flow restriction device to a surface water ditch which runs adjacent to the eastern boundary of Cooks Hole which discharges to the Thornhaugh Brook in the eastern corner of Cooks Hole. The sites are the subject of consented surface water management schemes for the

operational phases and following the completion of restoration operations at the sites^{17,18}.

Geology, hydrogeology and hydrology

- 11.7** The sites are in the catchment of the River Nene which is located approximately 1.8km east south east of Cooks Hole at its closest point. The Thornhaugh Brook flows generally west to east and crosses the central part of Cooks Hole. The Thornhaugh Brook is culverted beneath a small yard adjacent to the farm outbuilding in the central part of Cooks Hole. The Thornhaugh Brook is a tributary of the White Water Brook. The Thornhaugh Brook discharges to the White Water Brook approximately 2.9km east of Cooks Hole and the White Water Brook discharges to the River Nene approximately 3.0km east south east of Cooks Hole. A surface water ditch runs from the north of Thornhaugh adjacent to the north eastern boundaries of the sites.
- 11.8** Superficial deposits are recorded as not present at the sites. As set out in Section 3 of this report the geology at and in the vicinity of Cooks Hole comprises the Jurassic age Lincolnshire Limestone Formation which is underlain in turn by the Grantham Formation and the Northampton Sand Formation. The Grantham Formation comprises interbedded mudstones, sandy mudstones and siltstone-sandstones. The central part of Cooks Hole comprising the Thornhaugh Brook valley is underlain by the Grantham Formation. The Northampton Sand Formation is underlain in turn by the Whitby Mudstone Formation (formerly referred to as the Upper Lias). Groundwater is present generally in the Grantham Formation and Northampton Sand Formation and in the base of the Lincolnshire Limestone underlying Cooks Hole. Groundwater in the vicinity of the sites is abstracted for domestic water supply and agricultural use and provides base flow to local rivers and streams. The Thornhaugh Brook is fed by groundwater including from Cooks Hole Spring located adjacent to Cooks Hole Farmhouse. Settlement ponds for mineral wash water are located in the south eastern corner of Cooks Hole.

¹⁷ Augean plc. (July 2011). Cook's Hole – Schemes for the management of surface water and groundwater required under conditions 9 and 10 of Permission reference 03/01171/RMP-ROMPP conditions 10 and 11 of Permission ref.10/01440/MMFUL-Extension

¹⁸ Augean plc. (March 2012). Thornhaugh Landfill Site: Deferment of End-date and Extension of Development. Environmental Statement: Appendix G Surface Water.

11.9 The geology at and in the vicinity of Thornhaugh comprises the Lincolnshire Limestone Formation which in turn is underlain by the Grantham Formation and Northampton Sand Formation. In parts of Thornhaugh the sequence has been replaced partly with backfilled material comprising reworked material from the Lincolnshire Limestone Formation and Grantham Formation. The Northampton Sand Formation is underlain by the Whitby Mudstone Formation (formerly referred to as the Upper Lias). The strata dip gently to the east at and in the vicinity of Thornhaugh. To the north, east and south of the sites the Lincolnshire Limestone Formation, Grantham Formation and Northampton Sand Formation are cut by several valleys.

Flood zone designation

11.10 As stated in Section 3 of this report, based on the Environment Agency Flood Map for Planning Thornhaugh is located in Flood Zone 1. Flood Zone 1 is defined as land having a less than 1 in 1,000 annual probability of river or sea flooding. The majority of Cooks Hole is located in Flood Zone 1 except a small area approximately 20m to the north and south of Thornhaugh Brook which runs through Cooks Hole which is in Flood Zones 2 and 3. Flood Zone 2 is defined as land having between a 1 in 100 and a 1 in 1,000 annual probability of river flooding. Flood Zone 3 is defined as land having a greater than a 1 in 100 annual probability of river flooding. The site is not in an area which is at risk of flooding from the sea. The flood map for planning is reproduced at Appendix ES11.1.

11.11 Based on the information presented on Map C of the Peterborough SFRA the area of Cooks Hole comprising Flood Zone 3 is designated as Flood Zone 3a hence no part of the sites comprises the functional floodplain (Flood Zone 3b).

History of flooding and flood defences

11.12 There is no record shown on Map B of the Peterborough SFRA of historic flooding at the sites. The closest recorded incidence of historical fluvial flooding to the sites is approximately 1.7km east south east of the Cooks Hole site. Seven incidences of historical sewer flooding in the PE8 6 postcode area in which the sites are located are recorded in the Peterborough SFRA. No surface water, foul, or combined sewers are shown at or in the vicinity of the sites on the Peterborough SFRA map F0. No flood defences are shown at or in the vicinity of the sites on the EA Flood Map for Planning.

Flooding from surface water, sewer, drains, canals and reservoirs

- 11.13** Based on the extent of flooding from surface water map presented on the Gov.uk website the majority of the area of the sites are at a very low risk of flooding from surface water. The area of Cooks Hole adjacent to the Thornhaugh Brook and generally small areas comprising topographic hollows within the landform at the time that the maps were prepared are shown as being at a low, medium and high risk of surface water flooding. The designation of areas as being at a low, medium or high risk of surface water flooding is based on the topography at the sites at the time that the assessments were carried out. As the sites comprise mineral extractions and a landfill, the site topography changes regularly during the operational period and the topography has changed since the time the flood maps were prepared. No hollows except those designed to comprise drainage channels, ponds or detention basins are included in the proposed restored landform.
- 11.14** As stated above there are no surface water, foul or combined sewers shown on the Peterborough SFRA map. The sites are not located in the vicinity of any canals. The sites are not located within the maximum extent of any area at risk of reservoir flooding shown on the extent of flooding from reservoirs map presented on the Gov.uk website.

Flooding from groundwater

- 11.15** There are no records of groundwater flooding within the area the subject of the Peterborough SFRA. As the sites are underlain generally by the Lincolnshire Limestone Formation and the only outcrop of the underlying and less permeable Grantham Formation is within the Thornhaugh Brook valley it is considered unlikely that the sites are at significant risk due to groundwater flooding.

The sequential and exceptions tests

- 11.16** The sequential test is set out in the NPPF with the aim to steer new development to areas with the lowest probability of flooding. The flood risk vulnerability of various land uses and the appropriate land uses for different flood zones are defined in Table 2 of the PPG on flood risk. Both Thornhaugh and Cooks Hole are the subject of consented restoration schemes as set out above. Thornhaugh is located within Flood Zone 1 comprising the lowest flood risk hence the proposed development at Thornhaugh meets the requirements of the sequential test on this basis. The majority

of Cooks Hole is in Flood Zone 1 with the exception of the land immediately to the north and south of the Thornhaugh Brook. No increases in comparison with the existing and consented ground levels are proposed for the land within the area of Cooks Hole which comprises Flood Zones 2 and 3 hence there will be no loss of floodplain storage as a result of the proposed development. Runoff attenuation storage will be provided as part of the restored landform. Based on Table 2 of the PPG on flood risk minerals working and processing is classed as a "Less vulnerable development" which is appropriate in Flood Zones 1, 2 and 3a. As defined in Table 2 of the PPG on flood risk, it is not necessary to apply the exceptions test to less vulnerable developments in Flood Zones 1 to 3a. On the basis of the above it is concluded that the proposed development meets the requirements of the sequential test.

Baseline environment without implementation of the proposed development

11.17 It is necessary to outline the likely evolution of the baseline environment at the sites without the implementation of the proposed development. If the proposed revised restoration scheme was not implemented then the operations would continue at Cooks Hole until 2042 and the operations at Thornhaugh would continue to 2035. Cooks Hole would be restored to agricultural grassland with some tree and shrub planting at a lower level than the proposed landform with the landform sloping up to Thornhaugh. The opportunity to provide significant biodiversity net gain in Cooks Hole would not be realised. Thornhaugh would be restored to a mixture of woodland, hedgerows, shrub and scrub and calcareous grassland at a maximum elevation of 71.5mAOD to form a domed feature. There would be no changes to the sites operational practices and the sites would continue to be subject to the approved surface water management schemes. It is considered that the baseline for flood risk at the sites would not alter significantly.

Assessment of environmental effects

General

11.18 The proposed restoration profile is presented at Figure ES4.1 and details on the restoration proposal are described in detail in Section 6 of this report. The baseline conditions comprise the currently consented landforms. The restoration scheme for

the sites is shown on Figure ES4.3. The proposed phasing of the operations at the sites is shown on Figure ES4.2.

11.19 The layout of the proposed surface water management scheme is shown on Figure ES11.1. The catchment areas, proposed storage capacities and proposed maximum discharge rates in respect of the individual detention basins are summarised in Table ES11.1. The greenfield run off rates in respect of each individual detention basin catchment area as well as of the entire catchment area the subject of the proposed surface water management system are presented at Appendix ES11.2. The surface water run-off attenuation calculations in respect of the individual detention basin catchment areas along with justification of the parameters used are presented at Appendix ES11.3.

Environmental impacts during the operational phase of the proposed development

11.20 The restoration of the Thornhaugh site including the progressive construction and maintenance of the surface water management system will continue in accordance with the consented surface water management plan for Thornhaugh during the operational phase and following the completion of the restoration works. The proposed development includes no changes to the general arrangement of the consented surface water management infrastructure at the Thornhaugh site. The surface water from Thornhaugh will continue to be managed in the existing surface water management system. Leachate and any potentially contaminated surface water will continue to be managed separately to surface water consistent with the Environmental Permit in respect of the Thornhaugh landfilling operations. The management of leachate, any potentially contaminated surface water and clean surface water from the restored areas of the Thornhaugh site will continue to be the subject of the site Environmental Permit.

11.21 The restoration of Cooks Hole and the construction of the detention basins as shown on Figure ES11.1 will take place progressively. The restoration operations will be completed to the south of Thornhaugh Brook first and then to the north of Thornhaugh Brook to tie in with the landform at Thornhaugh. Temporary settlement basins will be constructed as necessary down slope of any working areas to minimise the potential for the discharge of silt laden runoff to the Thornhaugh Brook. During the operational period any attenuation basins constructed as the operations progress will collect surface water at the site and as currently the volume of water discharging from the

basins into Thornhaugh Brook will be controlled. Stockpiles will be dampened as necessary and those stockpiles that will remain in place for longer than 6 months will be seeded in order to minimise the risk of silt laden runoff generation. Ditches will be excavated near the stockpiles as necessary to allow for the capture of runoff and settlement of suspended solids and to minimise the risk of the discharge of silt laden runoff to Thornhaugh Brook and the surface water drainage ditch to the east of Cooks Hole. Suspended solids in the surface water will be managed as necessary through the use of settlement lagoons consistent with the current operations. Routine observations will be made by the Augean operational and environmental monitoring team during the placement of materials in proximity to Thornhaugh Brook or the surface water drainage ditch to the east of Cooks Hole to monitor the potential for silt laden runoff reaching the surface water. If silt laden runoff or otherwise contaminated runoff is observed to be migrating towards Thornhaugh Brook or the surface water drainage ditch to the east of Cooks Hole any such water will be impounded immediately and will not be released until the operators are satisfied that any suspended sediment which may pose a risk to water quality in the Thornhaugh Brook has settled.

Environmental impacts following the completion of the proposed development

- 11.22** No permanent buildings or structures will be constructed at the sites as a result of the proposed development. Cooks Hole Farmhouse and the farm outbuildings are located in the centre of Cooks Hole and will be retained. The surface water management plan presented at Appendix ES4.1 sets out the principles of the surface water drainage system at the restored landform and demonstrates that surface water generated at the Cooks Hole site can be managed on site with discharge at the pre-development greenfield runoff rate and that surface water at the Thornhaugh site can be managed with the currently consented discharge rate from the existing surface water management system without increasing flood risk downstream of the site. The layout of the proposed surface water drainage system is shown on Figure ES11.1.
- 11.23** As set out in Section 1 of this ES the material that will be used to create the proposed landform at Cooks Hole will comprise clean, naturally occurring materials which have been extracted as part of the existing and future landfill construction operations at the ENRMF as part of the landfill construction operations at Thornhaugh. Some of the

additional void created at Thornhaugh will be filled with waste types already consented for disposal there.

- 11.24** Consistent with the consented restoration proposals at the sites stockpiled soils present at the sites will be handled, managed and spread consistent with the soil handling and management plan presented at Appendix ES4.4. Consistent with the consented proposals the soil layer at the site will comprise generally a mixture of shallow, well drained, brashy calcareous soils, shallow stony soils placed over disturbed or backfilled limestone or re-placed soils with sandy subsoils. As the sites are underlain generally by the Lincolnshire Limestone Formation it is considered that the site derived soils are likely to have a high infiltration capacity. It is therefore considered that the infiltration characteristics of the restored soils placed at the site above the imported materials used to form the restoration profile will be similar to those comprising the pre-extraction greenfield situation and the currently consented baseline situation. Naturally occurring soil forming materials excavated as part of the ongoing landfilling operations at Thornhaugh will be used as necessary in order to supplement the restoration soil resources at the sites. Restoration soils will be imported for use at Thornhaugh under the existing Environmental Permit.
- 11.25** As shown at Appendix ES1.2 as part of the consented restoration scheme runoff generated at the Thornhaugh site drains to the perimeter of the landfill where it is conveyed to the existing attenuation pond in the north eastern corner of Thornhaugh and subsequently discharged via a flow restriction device to the surface water drainage ditch adjacent to the eastern boundaries of the sites. As shown on Figure ES11.1 a small area of the Thornhaugh restoration landform which currently drains to the attenuation pond at Thornhaugh will, as part of the proposed development, drain to the proposed surface water management system within the Cooks Hole site. No other changes are proposed to the general arrangement of the existing surface water drainage system in Thornhaugh. The proposed development will not result in an increase in the rates or volumes of surface water discharging to the existing attenuation pond when compared with the consented details and will remove a small area of the catchment from the consented surface water management system at Thornhaugh. The proposed development will therefore result in a betterment in comparison with the baseline situation with respect to flood risk at Thornhaugh and with respect to flood risk elsewhere.

- 11.26** The current principles of the consented management of surface water at the sites will continue as part of the proposed development. Surface water runoff attenuation will be provided within the proposed detention basins at Cooks Hole to restrict the overall discharge from the sites for up to a 1 in 100 year rainfall event plus a 40% allowance for climate change to greenfield runoff rates consistent with the upper end allowance for the 2070s presented on the climate change allowances for peak rainfall in England map on the Gov.uk website¹⁹. Surface water attenuation will be provided by a series of detention basins. The rate at which water will leave the attenuation basins will be controlled so that during extreme rainfall events a significant proportion of runoff will be retained to attenuate the runoff peak. The surface water attenuation function will be accomplished primarily by allowing water to accumulate in the basin areas temporarily during storm events and releasing the water from the basin areas in a controlled manner following the storm event. The design of the surface water management scheme includes the necessary provisions for climate change in particular the predicted increase in frequency and intensity of rainfall storm events. Consistent with guidance, the design rainfall event used in the surface water management plan presented at Appendix ES4.1 comprises the 1 in 100 year rainfall event plus a 40% allowance for climate change.
- 11.27** Suitable outlets for the discharge of water from the surface water management system will be created so that water can drain passively by gravity and in a controlled manner to the Thornhaugh Brook and the surface water drainage ditch adjacent to the eastern boundaries of the sites.
- 11.28** The restoration profile at Thornhaugh follows the best practice principles for the design of restored landfill sites including in particular that the landform should be raised with slopes designed to shed water in order to minimise rainfall infiltration through the low permeability cap and into the waste. The revised restoration profile at Cooks Hole will allow for an integrated and coherent landform at both sites. Consistent with the approved restoration profile the highest point on the restoration profile is 71.5m Above Ordnance Datum (AOD) in the central northern area of the Thornhaugh site. The proposed landform falls in all directions around the high point with the majority of the landform sloping towards the south east towards and in the direction of flow of Thornhaugh Brook. A 20 metre wide standoff will be maintained

¹⁹ DEFRA (2024) Nene Management Catchment peak rainfall allowances
<https://environment.data.gov.uk/hydrology/climate-change-allowances/rainfall?mgmtcatid=3059>

from the vegetation which is adjacent to Thornhaugh Brook and no raising of the existing ground levels will take place within Flood Zones 2 or 3. The proposed elevations adjacent to the Thornhaugh Brook range between approximately 50mAOD in the west of the site and 40mAOD in the east of the site. The proposed landform to the south of Thornhaugh Brook at Cooks Hole will drain generally towards the north east towards and in the direction of flow of the Thornhaugh Brook from a maximum elevation of 56mAOD.

- 11.29** The site is located approximately 50km south west of the nearest coast at Herring Hill and is approximately 50m above mean sea level and therefore is extremely unlikely to be affected significantly by the predicted sea level rise of up to 1.6m by 2125 assuming an upper end allowance based on the 95th percentile scenario for the Anglian river basin district. The majority of the areas of the sites is not located in an area which is identified as sensitive to flooding from rivers or the sea hence it is considered that based on the implementation of an effective surface water management plan the proposed development can be undertaken without increasing the risk of flooding at or in the vicinity of the site.

Surface water detention basin capacities

- 11.30** Suitable flow restriction devices will be fitted to the outflows in respect of each detention basin to restrict the discharge from each basin to the greenfield runoff rates presented in Table ES11.1. The drainage channels and pipes shown on Figure ES11.1 will have sufficient capacity to convey the runoff rate generated during the 1 in 100 year six hour rainfall event plus a 40% allowance for climate change within their respective catchment areas. There is sufficient capacity within each individual detention basin to restrict the discharge of surface water runoff during the 1 in 100 year rainfall event plus a 40% allowance for climate change to the greenfield runoff rate hence the proposed development will not increase flood risk in the catchment of the River Nene including in the catchment of the Thornhaugh Brook and White Water Brook.
- 11.31** In a 1 in 100 year + 40% flood event the site will discharge at a rate of 0.699 l/s/ha which is less than that assumed when designing the existing consented surface water management scheme for the northern area of the sites.

Mitigation and monitoring

- 11.32** As the majority of the area of the sites is not located in an area which is identified as sensitive to flooding from rivers or the sea and at negligible to low risk of flooding from other sources it is considered that no other mitigation with respect to flood risk will be necessary other than the measures that are specified in the surface water management scheme presented at Appendix ES4.1.
- 11.33** Following completion of the restoration the attenuation basins will still be utilised to manage surface water at the site. A monitoring and maintenance scheme in respect of the detention basins, pipes, flow restriction devices and drainage channels is set out within the surface water management plan.

Cumulative impacts

- 11.34** The proposed development will take place in proximity to the following consented developments which have been identified by Peterborough City Council should be considered within the application with respect to cumulative impacts:
- Thornhaugh II (winning and working of minerals and restoration using waste materials approximately 600m east of the site).
 - Thornhaugh IIB (winning and working of minerals and restoration using imported inert materials approximately 350m south east of the site).
 - Cross Leys Quarry, Leicester Road (restoration of quarry workings using imported inert materials and quarry waste approximately 1.2km north west of the site).
 - A47 roadworks between Wansford and Sutton the subject of Development Consent Order 2023 (S.I. 2023 No. 218) dated 17 February 2023 (approximately 1.8km east of the site).
 - East Northants Resource Management Facility (hazardous and low level radioactive waste treatment and disposal approximately 3.3km west of the site).
- 11.35** The proposed development is situated predominantly within Flood Zone 1. No raising of ground levels is proposed within the parts of the application area comprising Flood Zones 2 and 3. During and following the completion of the proposed development the runoff rate leaving the site will be limited to the greenfield runoff rate. Surface

water management at the surrounding developments listed above will be managed consistent with the requirements of local and national planning policy. It is therefore considered that the proposed development can be undertaken without significant individual or cumulative adverse impacts on flood risk.

Conclusions

- 11.36** The proposed development will not increase flood risk at or in the vicinity of the sites. No raising of existing ground levels are proposed within the parts of the application area located within Flood Zones 2 or 3a.
- 11.37** It is concluded that due to the location of the sites and the measures proposed in the surface water management plan (Appendix ES4.1) that the proposed development can be undertaken without significant residual effects on flood risk at or in the vicinity of the site.

12. Traffic and transport

12.1 A Transport Statement for the proposed development has been prepared by ADC Infrastructure and is presented at Appendix ES12.1. The scope of the Transport Statement has been agreed with Peterborough City Council as the Highways Authority through the scoping process and pre-application discussions.

Methodology

12.2 The Transport Statement has been prepared in accordance with the government guidance Travel Plans, Transport Assessments and Statements²⁰. It examines the transport implications of the proposed development taking into account the requirements of the National Planning Policy Framework (December 2023):

“114. In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location.

b) safe and suitable access to the site can be achieved for all users.

c) the design of streets, parking areas, other transport elements and the context of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and

d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.

115. Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.”

²⁰ HM Government (2014) Travel Plans, Transport Assessments and Statements. <https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements> Accessed December 2023.

Baseline

- 12.3** Access to Cooks Hole Quarry and Thornhaugh Landfill Site is from a simple T junction from the A47 Leicester Road. The A47 is subject to a national speed limit and is approximately 8 metres wide. It provides access to the strategic road network via the A1 approximately 2.5km to the east of the sites and continues east providing direct access to Peterborough. The A1 is orientated north-south providing access to London and parts of the north of England including Sheffield and Leeds (Figure ES1.1). To the west of the site the A47 is routed through the villages of Duddington, Uppingham, Tugby and Billesdon linking the sites with the eastern side of Leicester.
- 12.4** The accident records for the last five years on the highway network in the immediate vicinity of the site have been examined. There have been no recorded accidents at the site access in the last five years.
- 12.5** Paragraph 5.5.7 of the 2015 Environmental Statement confirms that planning permission reference 12/00463/MMFUL identified a maximum of 141 HGVs (282 HGV movements) entering the Thornhaugh Landfill site entrance in one day and that historic traffic generation at the site obtained from 2004 weighbridge records showed a maximum of 255 HGV arrivals per day (510 HGV total movements).
- 12.6** The HGV traffic generation in 2015 was presented in Section 5.5 of the 2015 Environmental Statement including traffic generation associated with the restoration of Thornhaugh.

Activity	Tonnage (per annum)	Payloads	Working Days	No. HGVs (per day)	Total HGV movements (per day)
Thornhaugh					
Waste imports	75,000	13t	278	21	42
Clay imports	125,000	20t	278	23	46
Restoration soils imports	11,700	20t	278	3	6
Export of recycled CDE materials	9,100	20t	278	2	4
Cooks Hole					
Mineral extraction exports	390,000			70	140
Total	610,800			119	238

- 12.7** The permitted vehicle numbers associated with the existing consented operations are 118 HGVS (236 HGV movements) per day. In 2023 there were 11,774 HGVs

associated with the operations at Thornhaugh. This equates to an average of 43 HGVs per day and 86 movements (43 in and 43 out) per day. In 2023 the mineral operations at Cooks Hole had ceased so there were no vehicles associated with mineral export.

- 12.8** It is necessary to outline the likely evolution of the baseline environment at the site without the implementation of the proposed development. It is considered that over time there would be a growth in traffic numbers on the wider traffic network in the vicinity of the site in line with national projections. If the proposed development is not undertaken the current operations would cease at Thornhaugh in 2035 and at Cooks Hole in 2042 as set out in existing planning permissions and traffic movements associated with the waste operations and the restoration of the sites would end.

Assessment of environmental effects

- 12.9** The proposed traffic generation associated with the development proposals for the revised restoration profile at the site has been calculated.

Activity	Tonnage (per annum)	Payloads	Working Days	No. HGVs (per day)	Total HGV movements (per day)
Thornhaugh					
Waste imports	120,000	13t	278	34	68
Clay imports	100,000	20t	278	18	36
Restoration soils imports	28,000	20t	278	6	12
Export of recycled CDE materials	10,000	20t	278	2	4
Cooks Hole					
Restoration materials importation (Average)	160,000	20t	278	29	58
Restoration importation (Max)	300,000	20t	278	54	108
Total (Average)	418,000			89	178
Total (Maximum)	558,000			114	228

- 12.10** There will be fluctuations in the rate of importation of clean, naturally occurring materials from ENRMF. On average it is anticipated that 160,000 tonnes per annum will be imported with a maximum importation rate of 300,000 tonnes per annum. Overall the total imports and exports from the site will be less than those anticipated in 2015. The comparison of the HGV movements associated with the proposed operations and the historic operations is presented below:

	No. of HGVs per day	Total HGV movements per day
Historic operations from 2004 data	255	510
Historic operations from 2015 data	119	238
Proposed operations (average imports)	89	178
Proposed operations (maximum imports)	114	228
<i>Net traffic generation (2004 vs average)</i>	<i>-166</i>	<i>-332</i>
<i>Net traffic generation (2004 vs maximum)</i>	<i>-141</i>	<i>-282</i>
<i>Net traffic generation (2015 vs average)</i>	<i>-30</i>	<i>-60</i>
<i>Net traffic generation (2015 vs maximum)</i>	<i>-5</i>	<i>-10</i>

12.11 The proposed development will generate between 282 and 332 fewer HGV movements per day than the maximum HGV movements in 2004. The proposed development will generate between 10 and 60 fewer HGV movements than the 2015 permitted HGV movements. The majority of the vehicle movements associated with the proposed operations are local traffic movements between ENRMF and the sites. The site will continue to operate safely with HGV movements reducing from historic operations. The existing access is suitable and provides adequate visibility in both directions.

12.12 On completion of the operations at the sites the existing site access will be closed. It will be necessary to retain an access for maintenance, landscaping and monitoring at the existing site access. An area for one vehicle to pull in from the A47 will be maintained. Access to the site will be via a locked gate. An amenity access will be provided at the former Cooks Hole access. The design of the amenity access is presented on Figure ES6.2. The access will provide suitable visibility and will provide access to a small car park.

Mitigation

12.13 No mitigation is necessary.

Cumulative impacts

12.14 The proposed development will result in fewer HGV movements than those previously and currently consented for the operations. Accordingly cumulative impacts will have been considered as the developments identified in Section 2 should have taken the existing operations at Cooks Hole/Thornhaugh into account as part of their traffic assessments.

Conclusion

- 12.15** The proposed development will result in fewer HGV movements than those previously and currently consented for the operations. The existing access is suitable and provides adequate visibility in both directions. There have been no recorded accidents at the site access in the last five years. It is concluded that the proposed development will not result in an unacceptable impact on highway safety and as a result there is no reason to refuse the application on highways grounds.

13. Noise

- 13.1** A noise impact assessment has been undertaken by Vibrock Limited and is presented at Appendix ES13.1. In the report the results of the assessment of the noise impact of the proposed development at the nearest sensitive receptors are presented.

Methodology

- 13.2** The approach to the assessment was agreed with Peterborough City Council through the scoping process (Appendix ES2.3). It was agreed that the existing noise limits within the existing planning permissions for the sites provide sufficient protection for the noise sensitive premises hence the noise assessment could be undertaken to compare the potential impacts with the existing noise limits for the site.
- 13.3** Noise level calculations have been undertaken in accordance with Annex F of BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Part 1: Noise'²¹. This guidance details methods to estimate noise from 'open sites' which can include quarries, waste sites and long-term construction projects. The attenuation due to any screening between the noise source and the receptor has been calculated in accordance with F.2.2.2.1 of BS 5228-1. For all noise prediction calculations, the ground absorption coefficient has been estimated according to the combination of soft and hard ground conditions present between the source and receiver position.
- 13.4** Noise level predictions at each assessment location have been made to a height of 1.5 metres above ground level and at least 3.5 metres from any reflecting surface other than the ground. All predictions made are 'free-field' sound levels to allow for an appropriate comparison with the noise limits outlined in the current planning conditions.
- 13.5** In order to consider the worst case scenario in the noise impact assessment the noise level predictions have been calculated with the combinations of plant working at the closest point to the receptor location. The predictions are worst case scenarios which may be of relatively short duration or may not occur at all. The predictions indicate

²¹ BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. Part 1: Noise. British Standards Institution 2014.

the potential highest LAeq,1h (free-field) noise level to which a particular property or group of properties may be exposed during the operations at the site. The worst-case situation may occur intermittently over the lifetime of the site, but longer term noise levels perceived outside of the site boundary will be significantly less under normal situations than the calculated predicted levels.

Baseline

- 13.6** Compliance monitoring was undertaken at the noise sensitive premises in the vicinity of the site in November 2023 at the locations specified in the current noise planning conditions for Cooks Hole Quarry and Thornhaugh Landfill Site (Appendix ES13.2). The noise monitoring locations are shown on Figure ES1.2. The weather conditions during the survey period were dry with a south westerly breeze. The noise monitoring was undertaken in accordance with the noise monitoring scheme for Thornhaugh Landfill. During the monitoring period Thornhaugh was fully operational. The results from the compliance monitoring are presented at Table ES13.1. At five of the six noise monitoring locations the noise limits were exceeded. However the exceedances of the noise limits were not as a result of the operations at Thornhaugh. The exceedances were related to vehicle movements on the surrounding highway network together with other industrial operations at Kings Cliffe Industrial Estate for the noise sensitive premises to the south of Cooks Hole.
- 13.7** A site inspection was undertaken in November 2023 when Thornhaugh was operating normally. The purpose of this monitoring was to obtain site specific sample measurements for specific types of plant used at the site for use as source emission data within this assessment to estimate the potential impacts from noise from the proposed development. The noise measurements taken on site comprised measurements of the noise generated by plant and activities. The noise measurements have been incorporated within the noise model.
- 13.8** It is necessary to outline the likely evolution of the baseline environment at the site without the implementation of the proposed development. If the proposed development was not implemented the operations at Thornhaugh would continue until 2035 and the operations at Cooks Hole would continue until 2042. The activities would continue to operate and to be subject to the noise limits set out in the current planning permissions. Following the completion of the operations at the sites in the

absence of any significant development in the vicinity of the site it is considered that the background noise levels would not be expected to increase significantly.

Assessment of environmental effects

- 13.9** The noise emissions associated with the proposed operations have been calculated and have been compared against the noise limits specified in the current planning permissions for the sites. A worst case scenario has been assessed for each of the short term operations such as capping and for the normal routine operations.
- 13.10** The assessment of the short term operations is presented at Table ES13.2. It is considered that some short term operations such as capping of the landfill cells in Thornhaugh are likely to have the highest noise impact when they occur at or close to the site boundary. The noise emissions from these temporary activities (such as capping, which takes place at the final levels of the sites) may not be screened from the closest residential properties. The predicted worst case site noise levels are all below the temporary 70dB $L_{Aeq,1h}$ limit. The assessment demonstrates that all short term operations can be undertaken within the temporary 70dB limit specified in the current planning permissions.
- 13.11** The assessment of the normal operations is presented at Table ES13.3. The results of the assessment demonstrate that the potential noise levels from normal operations associated with the proposed development will remain below the noise limits specified in the current planning conditions.

Cumulative impacts

- 13.12** The restoration of Cross Leys Quarry could take place simultaneously with the proposed revised restoration works at Thornhaugh and Cooks Hole. Cross Leys Quarry (planning references 19/01530/WCMM, 19/01370/WCMM and 19/01365/MMFUL dated 10 December 2020) is located in excess of 1.4 km to the west of the sites and given this separation distance it is considered that there will not be any potentially significant cumulative impacts associated with the activities at Cross Leys Quarry and at the proposed development.
- 13.13** There is extant planning permission for mineral and waste operations on land immediately adjacent to the south-east boundary of the application site. This area is

the subject of a number of planning permissions, namely Thornhaugh II (ref. M25/1/3 – M25/1/6 (97P0071) dated 8 February 1999 and APP/J0540/A/12/2179541/NWF dated 8 May 2013) and Thornhaugh IIB (14/01716/MMFUL dated 10 April 2015). It is understood that operations in the main part of Thornhaugh II ceased a number of years ago and that operations at Thornhaugh IIB are due to be completed by 2026. It is therefore considered that there are no potentially significant cumulative impacts associated with the activities at Thornhaugh II and the proposed revised restoration proposals at Thornhaugh and Cooks Hole.

Mitigation

- 13.14** A noise monitoring scheme for the proposed development is presented at Appendix ES4.5. This scheme is based on the currently approved noise monitoring schemes for the sites.

Conclusions

- 13.15** The results of the assessment demonstrate that the proposed development can be undertaken whilst adhering to the existing noise limits for the sites. It is considered by Peterborough City Council that the existing noise limits provide sufficient protection for nearby sensitive receptors. It is considered unlikely that the proposed development would result in any significant or unacceptable adverse impacts at noise-sensitive premises in the vicinity of the sites.

14. Amenity including dust

14.1 An assessment has been carried out by MJCA of the potential effects on amenity associated with dust, mud on the road and lighting as a result of the proposed development. A noise impact assessment is presented in Section 13 of this Environmental Statement. The potential for amenity impacts associated with the proposed development generally is present only in the immediate vicinity of the Cooks Hole and Thornhaugh (collectively known as the sites).

14.2 The activities associated with the proposed development with the potential to generate dust are the creation of stockpiles, the extraction of mineral arising from the construction of landfill cells, the processing of materials from mineral stockpiles, the processing of imported soil forming materials, the extraction, redeposition and processing of suitable historically deposited waste, the transportation of material at the site and off site, the importation of waste to Thornhaugh, the importation of clean naturally occurring materials to create the landform at Cooks Hole and the restoration of the sites including soil placement. HGVs leaving the site have the potential to result in the deposition of mud on the road. Lighting is installed at the site reception and parking area and mobile lighting is used as necessary in operational areas.

Methodology of the dust assessment

14.3 The methodology used for the assessment of impacts from dust is summarised below and presented in detail at Appendix ES14.1. A qualitative assessment has been carried out of the potential impacts associated with mud on the road and lighting.

14.4 The dust assessment has been undertaken generally in accordance with the Planning Practice Guidance Note for Minerals²² and the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Mineral Dust Impacts for Planning²³ together with MJCA experience of undertaking dust assessments for mineral extraction and processing facilities, landfill sites and waste processing facilities.

²² HM Government (2014) Planning Practice Guidance Note for Minerals <https://www.gov.uk/guidance/minerals>

²³ Institute of Air Quality Management (2016) Guidance on the Assessment of Mineral Dust Impacts for Planning v1

Baseline**Dust**

- 14.5** The annual mean air quality objective for PM₁₀ is 40µg/m³. The estimated annual mean PM₁₀ background concentration obtained from the Department for Environment, Food and Rural Affairs (DEFRA) for 2022 at the sites²⁴ is between 11.64µg/m³ and 14.29µg/m³ with mean of 13.09µg/m³. The background concentrations of PM₁₀ at the site are considerably below (i.e better than) the annual mean air quality objective of 40µg/m³. Given that the annual mean PM₁₀ background concentration at the sites is less than 17µg/m³²⁵ there is little risk that the process contribution from the operations would lead to an exceedance of the annual mean objective for PM₁₀. Accordingly it is considered not necessary to assess the potential impacts of dust on health further.
- 14.6** A dry hours wind rose prepared by ADM Limited based on data from the Meteorological Office for Wittering weather station located approximately 2.2km north north west of the site for the period 2000 to 2019 is presented at Appendix ES14.2. A dry hours wind rose only includes the hours with less than 0.2mm of rainfall. ADM Limited consider that the data collected at the Wittering weather station is representative of the conditions at the site.
- 14.7** The wind rose shows that the prevailing wind is from the west. Based on the wind rose data wind speeds, for approximately 54.72% of the dry hours wind speeds are between 0.5 metres per second (m/s) and 5m/s which is classed as calm through to gentle breeze on the Beaufort Scale. Wind speeds between 5m/s and 9m/s occur for approximately 35.5% of the dry hours which is classed as gentle breeze through to fresh breeze on the Beaufort Scale. Wind speeds greater than 9m/s occur for approximately 6.94% of the dry hours. During the remaining 2.85% of the dry hours the weather was either calm when no wind was observed (0.98%) or data was not collected at the Wittering weather station (1.87%). The wind data for the site is summarised in Table ES14.1. A copy of the Beaufort Scale is presented at Appendix ES14.3.

²⁴ DEFRA (2020) UK Ambient Air Quality Interactive Map <https://uk-air.defra.gov.uk/data/gis-mapping>

²⁵ Institute of Air Quality Management (2016) *Guidance on the Assessment of Mineral Dust Impacts for Planning v1.1*

14.8 The locations of the receptors considered in the assessment are shown on Figure ES14.1 and listed in Table ES14.2.

14.9 The existing sites both have established approved Dust Management Schemes^{26,27} with procedures to manage the potential impacts of the operations on the amenity of local residents as a result of the operations at the sites. There have been no complaints in the last 5 years regarding the operations at the sites with respect to dust.

Mud on the road

14.10 Access to Thornhaugh is from the A47 Leicester Road. The site access is shared by Cooks Hole. The site access road is surfaced with tarmac along the length to the wheelwash in the site reception area which is located generally centrally within Thornhaugh. The access road to Cooks Hole is to the east of the site entrance (Figure ES3.2). The continued operation and restoration of the sites has the potential to result in mud being tracked onto the public highway if appropriate controls are not implemented. The controls applied routinely are described below.

Lighting

14.11 Currently there is no permanent lighting at Cooks Hole. There is existing permanent external lighting in the site reception, weighbridge and parking areas at Thornhaugh. All permanent lighting is directed downwards and shielded and other than security lighting is switched off at the end of the working day. There is no evidence of adverse impact on amenity as a result of existing lighting at the site and no complaints regarding lighting have been received in the last 5 years.

14.12 The lighting at the existing sites' infrastructure including at the site reception area will not change as a result of the proposed development. Mobile lighting is used currently on the operational area of Thornhaugh during dark operational hours only and will be used as necessary during operational hours only in the operational areas and haul roads in both sites.

²⁶ URS (2013) Scheme in fulfilment of Condition no. 8 attached to planning permission 12/00463/MMFUL

²⁷ Augean PLC (2010) Appendix B: Proposed Dust Management Scheme of the Supporting Statement

Assessment of environmental effects***Dust***

- 14.13** To result in an impact dust must be generated by the proposed development and carried in sufficient quantities from the source to a sensitive receptor which is dependent on site activities and meteorological conditions including wind speed, wind direction and rainfall. Dust impacts have the potential to occur mainly within 400m of the operation, even at the dustiest of sites.
- 14.14** For the purpose of this assessment and in accordance with the guidance it is assumed that significant dust blow will not occur below wind speeds of 5m/s or in the hours with rainfall on average greater than 0.2mm. Based on the dry hours wind rose data presented in Table ES14.1 during approximately 42.44% of the dry hours wind speeds are above 5m/s.
- 14.15** The generation of dust at the site is associated with restoration, mineral extraction associated with cell excavation, cell engineering, materials handling, on site transportation, mineral and waste processing, stockpiles and exposed surfaces together with off site transportation. The residual source emissions for each of the site activities have been determined based on the IAQM guidance including Table A3-1. The residual source emissions are the potential emissions without any operational controls in place. The sites have and will continue to implement operational controls in order to minimise the emissions of dust therefore the assessment is based on a worst case situation.

Activity	Residual Source Emissions with no controls in place
Site preparation/restoration	Large
Mineral Extraction	Small
Materials Handling	Large
On site transportation	Large
Mineral/waste processing	Large
Stockpile and Exposed Surfaces	Large
Off site transportation	Medium

- 14.16** Site preparation and restoration operations comprising stripping of overburden in Thornhaugh and the placement of soils and overburden in Thornhaugh and naturally occurring materials in Cooks Hole during restoration operations will be undertaken periodically throughout the life of the development due to the phased nature of the operations. Simultaneous restoration operations may be undertaken during the operation of the sites with the working area and areas under restoration moving through the sites sequentially during the development. Based on the categories provided in the IAQM guidance there will be a large working area (greater than 10ha) associated with the landfilling and restoration operations at the sites, a high volume of material movements (over 100,000m³) and a large number of mobile plant. Stockpiles will be seeded as soon as possible following construction if they are to remain in place for longer than 6 months. The naturally occurring materials, soils and overburden that will be placed during restoration will have the potential to generate dust and will be placed within 50m of the site boundary and low sensitivity receptors such as footpaths. On the basis of these factors the residual source emissions from the site preparation/restoration without any operational controls are categorised as large.
- 14.17** Cell construction will be carried out in phases in Thornhaugh. During the construction of the landfill cells mineral will be extracted. The working area for restoration could exceed 10 hectares which is classed as a large working area in the IAQM guidance. Some cell construction operations in Thornhaugh will take place within 50m of the site boundary and in close proximity to low sensitivity receptors such as footpaths. The residual source emissions for cell construction and mineral extraction are small and the residual source emissions for materials handling are large.
- 14.18** Based on the categories in the guidance, the length of the access road from the access point to the wheel wash is approximately 240m and the proposed haul roads will be longer than 500m. The number of HGV movements associated with activities at the sites are categorised as large (up to 228 movements per day). A speed restriction of 10mph will be enforced on the sites. The residual source emissions for on site transportation is categorised as large and off site transportation is categorised as medium.

- 14.19** Mineral and waste processing operations will involve sorting, screening and crushing. Less than 200,000 tonnes per annum of minerals or waste will be processed at the site. The overall dust potential of the materials being processed is medium. The residual source emissions for mineral and waste processing are categorised as large.
- 14.20** Stockpiles on site generally will not exceed 5m in height but could be higher and will be sprayed with a water bowser where necessary. The soils which currently are in stockpiles will remain in storage until needed in the restoration of the sites. The area of exposed surfaces is categorised as large. The exposed surfaces at the site are categorised as having a high dust threshold however the wind speeds at the site are small. The residual source emissions from stockpiles and exposed surfaces are categorised as large.
- 14.21** The magnitude of dust impact at each of the receptors within 400m of the application boundary without the application of any dust control measures has been assessed and the results of the assessment are presented at Table ES14.2. The locations of the receptors are shown on Figure ES14.1. Based on the assessment and the information presented in Table ES14.2 it is concluded that based on the wind direction during dry hours together with the location of sensitive receptors and without the implementation of specific mitigation or dust controls there is the potential for between a negligible and slight adverse effect of dust impact. As with the current operations at the sites good practice and standard dust management controls will be implemented at the sites to minimise the potential for dust emissions and impacts. The dust management controls that are and will continue to be implemented at the sites are presented in Table ES14.3.
- 14.22** Based on the qualitative assessment of the proposed activities it is concluded that without appropriate management there is the potential for between a negligible and slight adverse effect of dust impacts on receptors within 400m of the application boundary. Regular monitoring for deposited dust is carried out at Thornhaugh in accordance with the monitoring action plan specified in the Environmental Permit. It is concluded that dust emissions have been and will continue to be controlled effectively using common and effective methods to a standard such that it is unlikely that there will be significant dust emissions from the sites. In the planning practice

guidance for minerals it is stated that dust emissions can be controlled by good practice measures.

Mud on the road

- 14.23** The wheel cleaning facilities will continue to be used for all HGVs visiting the site before leaving the site onto the public highway. The access road from the wheel wash to the highway is hard surfaced which minimises the potential for mud and debris to be tracked onto the road network. The hard surfaced length of the site internal access road will continue to be cleaned regularly by a road sweeper and maintained in good condition. The A47 in the vicinity of the site is also cleaned regularly by a road sweeper. Based on the wheel cleaning facilities and the proposed cleaning and maintenance regime the risk of nuisance from the proposed development at the sites associated with mud and debris on the local road network is low.

Lighting

- 14.24** It is considered that there will not be an unacceptable impact on amenity as a result of the continued use of lighting as part of the proposed development. With the exception of security lighting the lighting will only be used when the site is operational and all lighting will be directed downwards and shielded to minimise the visibility of light. A review of the complaints records for the previous five years show that there were no complaints regarding lighting at the site. A lighting scheme for the sites is presented at Appendix ES4.2.

Mitigation and monitoring

- 14.25** The mitigation measures proposed to minimise the impacts of dust are described in this section of the ES and will continue to be implemented for the proposed sites. The mitigation measures proposed to minimise the impacts of dust and mud on the road are summarised in Table ES14.3. The operational measures undertaken to minimise impacts from lighting comprise the continued use only of necessary lighting and, where it is used it will be downward facing and shielded. The lighting at the site will be operated in accordance with the lighting scheme presented at Appendix ES4.2. All HGVs are required to use the wheelwash before departing the sites.

- 14.26** The dust management controls that are currently operational at the sites will continue to be implemented throughout the life of the development and the control and monitoring of emissions of particulates including dust at Thornhaugh will continue to be regulated through the Environmental Permit.

Cumulative impacts

- 14.27** There is the potential for cumulative effects with respect to dust from the continued operations at the existing sites in combination with the other developments in the vicinity of the site. It has been demonstrated in this assessment that dust emissions from the operations at the existing sites can be suitably controlled. It is therefore considered unlikely that there will be an unacceptable cumulative impact with respect to dust emissions from the proposed development in combination with dust emissions from surrounding land uses.

Conclusions

- 14.28** The potential impact of the proposed development on amenity arising from dust, mud on the road and lighting has been considered. Subject to the proposed controls it is unlikely that there will be significant dust emissions from the sites and there will not be a significant impact on air quality or PM₁₀ concentrations in the vicinity of the sites as a result of the proposed development. It is concluded that dust emissions can be controlled to a standard such that the proposed development will not result in a significant impact with respect to nuisance relating to dust. It is demonstrated that potential nuisance from the sites associated with mud and debris on the local road network is limited. There will not be any unacceptable impacts on amenity as a result of the lighting installed as part of the proposed development.

15. Conclusions

- 15.1** An Environmental Impact Assessment (EIA) has been carried out of the effects of the proposed development. Technical studies have been undertaken to establish the baseline environment of the application site and the surrounding areas and an assessment has been carried out of the potential impacts associated with the proposed development. The findings of the impact assessments are presented in this Environmental Statement (ES) which is submitted with this application. This ES presents the likely significant environmental effects of the proposals identified in the EIA, the appropriate mitigation measures which will be put in place where necessary and any residual effects. The Nationally Significant Infrastructure Project operations at ENRMF are inextricably linked with the proposed development as a significant proportion of the waste inputs to Thornhaugh arise as treatment residues from the treatment of predominantly hazardous wastes at the ENRMF waste treatment facility and as the engineering clay materials arising from the formation of landfill cells at ENRMF are used in the construction of the engineered containment to the landfill cells at Thornhaugh. Importantly, the proposed development will facilitate the continued operation of the Nationally Significant Infrastructure Project at ENRMF by using the excess clean, natural excavated material arising from the landfill construction operations at ENRMF to create an integrated landform across both Cooks Hole and Thornhaugh.
- 15.2** As concluded in the assessments for each of the aspects assessed, the technical assessments demonstrate that the proposed development can be undertaken without any long term unacceptable impacts on the environment. The cumulative impacts with the other identified developments have been assessed. It is considered that in combination there will not be any unacceptable cumulative impacts as a result of the proposed development.
- 15.3** The proposed restoration of the sites will create a mosaic of habitat including woodland, scrub, grassland, scattered trees, a network of hedgerows, waterbodies and areas of open mosaic habitats. The restoration scheme will provide new and enhanced links to existing habitats and will extend the capacity of Bedford Purlieus to support notable species. The restoration scheme will contribute to the conservation aims of Nature Recovery Networks within the wider Rockingham Forest area. The

proposed new and extended habitats will generate significant Biodiversity Net Gain substantially in excess of the 10% specified in the Environment Act 2021.

TABLES

Table ES2.1

A summary of the issues raised in the Scoping Opinion and a description of the way in which the issues are addressed in the Environmental Impact Assessment and the Environmental Statement

Consultee	Subject	Specific issue raised and comments made	Comments and/or the location in the Environmental Statement or Planning Application Statement in which the issues are addressed
Peterborough City Council	Ecology and Biodiversity	<p>Natural England have provided some generic advice with regard to the general principles of Environmental Impact Assessment, and specifically highlight the following Sites of Special Scientific Interest which may be affected by the development, including;</p> <ul style="list-style-type: none"> - Bedford Purlieus - Bonemills Hollow - Wansford Pasture - West Abbot's and Lound Woods <p>and advise that an Environmental Statement should include a full assessment of the direct and indirect effects of the development on the features of special interest within the SSSIs and identify appropriate mitigation measures to avoid, minimise or reduce any adverse significant effects.</p> <p>The Wildlife Officer has confirmed their agreement that the proposed scoped in aspects (in relation to the Ecology section) represent the full potential impacts of the development as outlined within the report.</p> <p>It is noted and agreed that the Biodiversity Net Gain baseline for assessment is the currently approved restoration schemes for Cook's Hole and Thornhaugh I.</p>	<p>The Ecological Impact Assessment is presented at Appendix ES8.1 and summarised in Section 8 of this Environmental Statement. The methodology, baseline, environmental effects and mitigation are presented in Section 8 of this Environmental Statement. A desk study has been undertaken to identify internationally and statutorily designated sites within 5km and non statutorily designated sites within 2km of the sites using MAGIC²⁸ and Natural England's Nature on the Map. The Cambridgeshire and Peterborough Environmental Records Centre (CPERC) and Northamptonshire Biodiversity Records Centre (NBRC) were asked to provide a data report on local sites of conservation interest including County Wildlife Sites (CWS) and Local Wildlife Sites (LWS) together with records for protected or notable species within 2km of the sites.</p> <p>The potential impacts on the four SSSIs are considered in the EclA and the summary of the potential impacts on the SSSIs is presented at Paragraph 8.35 of the Environmental Statement.</p>
	Landscape and Visibility	<p>The proposed scope of the Landscape and Visual Impact Assessment is acceptable, and the appropriate character areas identified. The proposed viewpoints have been discussed, and advice provided with regard to their suitability in an email to Sophie Serdetschniy 9 November 2023, albeit three of recommended viewpoints relate specifically to assisting with the visual assessment of the heritage setting of the Cook's Hole farmhouse.</p>	<p>Noted.</p> <p>The viewpoint locations are presented on Figure ES10.1 together with the photomontage locations. The photomontages have been prepared to show how the setting of Cooks Hole Farmhouse will be affected as a result of the proposed development. The photomontages are presented at Appendix ES10.1.</p>
	Cultural Heritage	<p>It is acknowledged that there is no potential for buried archaeology to be present and therefore no requirement for assessment of potential impacts on buried archaeology.</p> <p>The Conservation Officer (CO) advises that there are three separate aspects of the proposal which should be assessed from a conservation perspective; historical views between different heritage assets, specific views of the Listed Cook's Hole farmhouse, and views along public rights of way of the various heritage assets; these viewpoints have been identified and shared via email as for the LVIA.</p> <p>It is acknowledged and accepted that there will be no discernible visible impact from proposed viewpoint number 5 (i.e. that from Thornhaugh village) and as such is it not considered necessary to demonstrate this, although an additional viewpoint from Sibberton Lodge (not 'Stibbington' as mistakenly called in the CO comments) is recommended. The three proposed additional viewpoints (on footpath numbers 2 and 4) are considered appropriate to assess how the Cook's Hole farmhouse will be appreciated at a closer location.</p>	<p>The Heritage Statement is presented at Appendix ES9.1 and summarised in Section 9 of this Environmental Statement. The historical views between heritage assets, views of Cooks Hole Farmhouse and views from public rights of way of Cooks Hole Farmhouse have been considered. The viewpoint locations considered in the LVIA are presented on Figure ES10.1 and include a viewpoint from Sibberton Lodge (VP8). The photomontages have been prepared to show how the setting of Cooks Hole Farmhouse will be affected as a result of the proposed development. The photomontages are presented at Appendix ES10.1.</p>
	Water resources and Flood Risk Assessment	<p>The Environment Agency have confirmed that no further groundwater assessments would be required, and it is accepted that assessments previously undertaken in 2015 for Thornhaugh and 2011 for Cook's Hole concluded there would be no significant risk to groundwater or surface water quality as a result of previously approved operations. The proposed scope focusing on surface water run off generation</p>	<p>Noted. The flood risk assessment and surface water drainage assessment is presented at Section 11 of the Environmental Statement.</p>

²⁸ DEFRA (2023) MAGIC website <https://magic.defra.gov.uk/>

Consultee	Subject	Specific issue raised and comments made	Comments and/or the location in the Environmental Statement or Planning Application Statement in which the issues are addressed
		at the sites is therefore considered to be acceptable and consideration should be given to the potential effect of future climate change on the intensity of storm events.	
	Transport	<p>The report does not clarify the proposal with regard to how the mineral to be processed at Cook's Hole will be used; it is expected that any application would be clear as to whether any minerals to be processed at Cook's Hole are intended to be exported from the site such that an accurate traffic assessment can be undertaken.</p> <p>The Local Highways Authority have confirmed that the Environmental Statement should include a Transport Statement comparing the proposed development with the existing consents and the historic and current flows with regard to forecast traffic flows until 2042. Full details of the proposed access to the car park to be retained post restoration for amenity purposes should also be provided.</p>	A Transport Statement is presented at Appendix ES12.1 and summarised in Section 12 of this Environmental Statement. A comparison of HGV movements associated with the historic operations and the proposed operations has been undertaken and is presented in Section 12 and Appendix ES12.1. The access design for the amenity access is presented at Figure ES6.2.
	Noise	The Pollution Control Officer has not identified any issues with the proposed scope of the noise assessment. It is acknowledged that there have been no new developments or activities in the vicinity of the sites that would be considered significant enough to notably change the baseline acoustic environment and that noise sensitive receptor locations remain appropriate.	Noted. A compliance noise assessment has been undertaken against the existing noise limits and is presented at Appendix ES13.2. A noise impact assessment for the proposed development has been undertaken and is presented at Appendix ES13.1.
	Amenity and dust	The Pollution Control Officer has confirmed that PM10 has not been identified as a significant risk to human health that requires further assessment as part of the proposals for the site, although a dust assessment will be required as set out in the report.	<p>An assessment of the effects on amenity including dust is presented at Section 14 of this Environmental Statement. The dust assessment has been undertaken generally in accordance with the Planning Practice Guidance Note for Minerals²⁹ and the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Mineral Dust Impacts for Planning³⁰. The methodology used for the assessment of impacts from dust is presented in Appendix ES14.1.</p> <p>The methodology, baseline, environmental effects and mitigation measures in regard to dust are presented in Section 14 of this Environmental Statement. The magnitude of dust impact at each of the sensitive dust receptors within 400m of the application boundary has been assessed and the results of the assessment are presented at Table ES14.2. The locations of the receptors are shown on Figure ES14.1. It is considered in the dust assessment that the proposed development on amenity arising from dust, mud on the road or lighting will not have any unacceptable impacts on the surrounding areas.</p>
	Climate change and major accidents	<p>It is agreed that it is not necessary to provide a separate chapter on climate change, and instead ensure that the predicted effects of climate change are addressed in the flood risk and surface water assessments.</p> <p>Given the sites location within an Aircraft Safeguarding Zone, sufficient information needs to be presented with any application to ensure compliance with the requirements of the safeguarding zone.</p>	<p>A Flood Risk Assessment is presented at Section 11 of this Environmental Statement. The flood risk assessment includes a 40% allowance for climate change.</p> <p>Consideration has been given to the restoration proposals and the size of the ponds due to the location of the site in the RAF Wittering Aircraft Safeguarding Zone. Further information is provided at Section 6 of the Environmental Statement.</p>
	Other issues	<p>The EA advise that Thornhaugh landfill site currently has an environmental permit which includes groundwater monitoring, and that the proposed restoration at Cook's Hole will also require a permit as it involves the use of quarry wastes and the importation of inert material. The permit application process may require additional groundwater assessment / monitoring.</p> <p>Any application will require clarity as to the extent of mineral working, and whether this will be exported off site.</p>	<p>Noted.</p> <p>An Environmental Permit may not be necessary for Cooks Hole if the activities fall under the CL:AIRE protocol.</p> <p>At Table ES4.1 a description of the currently approved development at Cooks Hole Quarry and Thornhaugh Landfill Site is presented together with the changes</p>

²⁹ HM Government (2014) Planning Practice Guidance Note for Minerals <https://www.gov.uk/guidance/minerals>

³⁰ Institute of Air Quality Management (2016) Guidance on the Assessment of Mineral Dust Impacts for Planning v1

Consultee	Subject	Specific issue raised and comments made	Comments and/or the location in the Environmental Statement or Planning Application Statement in which the issues are addressed
		The proposal describes the continuation of landfilling at Thornhaugh; given that any new application would, if approved, result in a new permission, it is imperative that all aspects of the existing approved operations that are proposed for continuation are clearly set out, and will require sufficient information for assessment given the passage of time since original approvals may have been granted and any changes to the legislative framework in the intervening period.	that will be made to the consented developments as a result of the proposed development.
INDIVIDUAL CONSULTATION RESPONSES			
Environment Agency	Water resources	We agree that no further groundwater assessments would be required for this proposal. This is due to the application being mainly for continued operations at both sites with a more joined up restoration scheme. Thornhaugh Landfill site currently has an environmental permit which includes groundwater monitoring. The proposed restoration at Cooks Hole will also require an environmental permit as it involves the use of quarry wastes and will import inert material. The permit application process may require additional groundwater assessment/monitoring.	Noted. An Environmental Permit may not be necessary for Cooks Hole if the activities fall under the CL:AIRE protocol.
Conservation Officer (PCC)	Cultural Heritage	The relevant heritage relationships which are considered to potentially be impacted from these proposals are Thornhaugh Village, Sibbington Lodge and Home Farm. The proposed views 1 for Home Farm and 5 for Thornhaugh are considered to be sufficient for this towards the asset but there is a question regarding this in the other direction. If it is demonstrated that there is no impact or the impact is complete then this can be understood and assessed but if there is some intermediate impact then this may require an understanding of the relationship change from both directions. With regard Stibbington Lodge, the relationship is considered to be less and in combination where the change in landscape which is proposed to occur the any impact will be less. However there is a question why there are no landscape aspects from the east along the A47 have not been included within the analysis as this appears to be a general hole with the proposed analysis. If this were to be included, it would probably also be a good equivalent for this relationship	The Heritage Statement is presented at Appendix ES9.1 and summarised in Section 9 of this Environmental Statement. The historical views between heritage assets, views of Cooks Hole Farmhouse and views from public rights of way of Cooks Hole Farmhouse have been considered. The viewpoint locations considered in the LVIA are presented on Figure ES10.1 and include a viewpoint from Sibberton Lodge (VP8). The photomontages have been prepared to show how the setting of Cooks Hole Farmhouse will be affected as a result of the proposed development. The photomontages are presented at Appendix ES10.1. There are views of Cooks Hole Farmhouse from VP10 which is presented at Appendix ES10.1.
	Rights of Way	The proposed view numbers, 1, 3, 4 and 8 are considered sufficient to capture the impact along the route from a distance from the heritage asset. There is a question regarding the views from the heritage asset outwards along these public rights of way and also how Cooks Hole will be appreciated at a closer location. As such there needs to be views from Cooks Hole looking eastward (and southward if there are proposed material changes in this direction) and of Cooks Hole from the east and south.	
	Landscape and Visibility	All of the proposed views are from a distance and do not capture how Cooks Hole will be appreciated within the landscape from a close but not immediate distance. As such these must be views assessed. The views from the east and south along the public right of way will presumably correspond with those required above. In addition, as the building is Listed, its significance is not just from public locations but also how it is appreciated in the wider landscape. A such, in addition to the two aforementioned locations a view from the west should be considered. These three points should be sufficient to ensure that a holistic understanding of how Cooks Hole will be appreciated in its environment can be ascertained. Although not specifically heritage considerations, the LVIA is a useful tool to gain a broader understanding of the change on setting for the area. As such here is a question regarding why views from the East and South appear to have been omitted from the proposals.	
Historic England	Cultural heritage	Historic England provides advice when our engagement can add most value. In this case we are not offering detailed advice. This should not be interpreted as comment on the merits of the application. We suggest that you seek the views of your specialist archaeological and conservation advisers. It is not necessary to consult us on this application again, unless there are material changes to the proposals.	Noted.

Consultee	Subject	Specific issue raised and comments made	Comments and/or the location in the Environmental Statement or Planning Application Statement in which the issues are addressed
Local Highway Authority (PCC)	Traffic and transport	<p>...I understand the current planning consent (i.e. 15/00230/MMFUL) related to completion of works at. The Transport Assessment (TA) pertaining to that consent considered a context relevant at that time. As such I consider that the EIA should produce, for completeness, a new TA that would relate to the current context in terms of forecast traffic flows up until 2042. This will include giving consideration to:</p> <ul style="list-style-type: none"> a) assessing whether the existing access is fit for purpose up until 2042 b) the forecast flows taking account of relevant committed development at the access and other relevant junctions within the schemes sphere of influence. c) the latest 5 year recorded accident data to examine themes and cluster if relevant. d) the adequacy of the routes taken by traffic that will be importing material <p>In conclusion, as the scheme has yet to be finalised I consider that its premature to assume that a TA will not be required. For completeness, a TA should accompany the EIA and its scope and content should be agreed with the LHA through the local planning authority in advance of the submission of the planning application.</p>	<p>These comments pre-date a meeting that has been held between the applicant and the Highways Authority on 16 November 2023. It was agreed at this meeting that a Transport Statement (rather than a Transport Assessment) would be appropriate including a review of the consented and proposed traffic numbers and traffic routes. A Transport Statement is presented at Appendix ES12.1 and summarised in Section 12 of this Environmental Statement.</p>
Natural England	Cumulative and in-combination effects	<p>The ES should fully consider the implications of the whole development proposal. This should include an assessment of all supporting infrastructure. An impact assessment should identify, describe, and evaluate the effects that are likely to result from the project in combination with other projects and activities that are being, have been or will be carried out. The following types of projects should be included in such an assessment (subject to available information):</p> <ul style="list-style-type: none"> a. existing completed projects; b. approved but uncompleted projects; c. ongoing activities; d. plans or projects for which an application has been made and which are under consideration by the consenting authorities; and e. plans and projects which are reasonably foreseeable, i.e. projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects. 	<p>The approach to the cumulative assessment is set out in Section 2 of the Environmental Statement. Where necessary the cumulative effects are considered in the technical sections of the Environmental Statement.</p>
	Biodiversity and Geodiversity	<p><u>General Principles</u> The National Planning Policy Framework (paragraphs 174-175 and 179-182) sets out how to take account of biodiversity and geodiversity interests in planning decisions. Further guidance is set out in Planning Practice Guidance on the natural environment.</p> <p>The potential impact of the proposal upon sites and features of nature conservation interest and opportunities for nature recovery and biodiversity net gain should be included in the assessment.</p> <p>Ecological Impact Assessment (EclA) is the process of identifying, quantifying, and evaluating the potential impacts of defined actions on ecosystems or their components. EclA may be carried out as part of the EIA process or to support other forms of environmental assessment or appraisal. Guidelines have been developed by the Chartered Institute of Ecology and Environmental Management (CIEEM).</p> <p>Local planning authorities have a duty to have regard to conserving biodiversity as part of their decision making. Conserving biodiversity can include habitat restoration or enhancement. Further information is available here.</p>	<p>The Ecological Impact Assessment is presented at Appendix ES8.1 and summarised in Section 8 of the Environmental Statement. The Biodiversity Net Gain Plan for the proposed development is presented at Appendix ES6.1 and the completed statutory metrics (one for the consented restoration scheme and one for the proposed restoration scheme) are presented at Appendices ES6.2 and 6.3 respectively. Opportunities for nature recovery and biodiversity have been considered.</p>
	Designated nature conservation sites	<p><u>Nationally designated sites</u> The development site is within or may impact on the following Site of Special Scientific Interest:</p> <ul style="list-style-type: none"> • Bedford Purlieus • Bonemills Hollow • Wansford Pasture 	<p>The potential impacts on the four SSSIs are considered in the EclA and the summary of the potential impacts on the SSSIs is presented at paragraph 8.35 of the Environmental Statement.</p>

Consultee	Subject	Specific issue raised and comments made	Comments and/or the location in the Environmental Statement or Planning Application Statement in which the issues are addressed
		<ul style="list-style-type: none"> • West Abbot's and Lound Woods <p>The development site is within the following National Nature Reserve:</p> <ul style="list-style-type: none"> • Bedford Purlieus <p>Sites of Special Scientific Interest are protected under the Wildlife and Countryside Act 1981 and paragraph 180 of the NPPF. Further information on the SSSI and its special interest features can be found at www.magic.gov. Natural England's SSSI Impact Risk Zones can be used to help identify the potential for the development to impact on a SSSI. The dataset and user guidance can be accessed from the Natural England Open Data Geoportal.</p> <p>The Environmental Statement should include a full assessment of the direct and indirect effects of the development on the features of special interest within the SSSI and identify appropriate mitigation measures to avoid, minimise or reduce any adverse significant effects. The consideration of likely significant effects should include any functionally linked land outside the designated site. These areas may provide important habitat for mobile species populations that are interest features of the SSSI, for example birds and bats. This can also include areas which have a critical function to a habitat feature within a site, for example by being linked hydrologically or geomorphologically.</p>	<p>The proposed development does not fall within the boundary of the Beford Purlieus National Nature Reserve. The boundary of the National Nature Reserve runs to the west of Old Oundle Road which runs to the west of the application boundary.</p>
	Regionally and Locally Important Sites	<p>The ES should consider any impacts upon local wildlife and geological sites, including local nature reserves. Local Sites are identified by the local wildlife trust, geoconservation group or other local group and protected under the NPPF (paragraph 174 and 175). The ES should set out proposals for mitigation of any impacts and if appropriate, compensation measures and opportunities for enhancement and improving connectivity with wider ecological networks. Contact the relevant local body for further information.</p>	<p>The potential impacts on the County Wildlife Site within the boundary of Thornhaugh are addressed in the EclA and are presented at Paragraph 8.36 of the Environmental Statement.</p>
	Protected species	<p>The conservation of species protected under the Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulations 2017 is explained in Part IV and Annex A of Government Circular 06/2005 Biodiversity and Geological Conservation: Statutory Obligations and their Impact within the Planning System.</p> <p>The ES should assess the impact of all phases of the proposal on protected species (including, for example, great crested newts, reptiles, birds, water voles, badgers and bats). Natural England does not hold comprehensive information regarding the locations of species protected by law. Records of protected species should be obtained from appropriate local biological record centres, nature conservation organisations and local groups. Consideration should be given to the wider context of the site, for example in terms of habitat linkages and protected species populations in the wider area.</p> <p>The area likely to be affected by the development should be thoroughly surveyed by competent ecologists at appropriate times of year for relevant species and the survey results, impact assessments and appropriate accompanying mitigation strategies included as part of the ES. Surveys should always be carried out in optimal survey time periods and to current guidance by suitably qualified and, where necessary, licensed, consultants.</p> <p>Natural England has adopted standing advice for protected species, which includes guidance on survey and mitigation measures. A separate protected species licence from Natural England or Defra may also be required.</p>	<p>Species specific surveys have been undertaken for great crested newts, reptiles, badgers, bats, birds and invertebrates. The results of the surveys are presented in Annex 1 of Appendix ES8.1. The potential impacts on species are presented in the EclA presented at Appendix ES8.1.</p>
	District Level Licensing for Great Crested Newts	<p>District level licensing (DLL) is a type of strategic mitigation licence for great crested newts (GCN) granted in certain areas at a local authority or wider scale. A DLL scheme for GCN may be in place at the location of the development site. If a DLL scheme is in place, developers can make a financial contribution to strategic, off-site habitat compensation instead of applying for a separate licence or</p>	<p>Discussions have been held with Natural England with respect to licensing for great crested newts. A draft licence application will be submitted shortly with a view to obtaining a Letter of No Impediment from Natural England during the determination of the planning application.</p>

Consultee	Subject	Specific issue raised and comments made	Comments and/or the location in the Environmental Statement or Planning Application Statement in which the issues are addressed
	Priority habitats and species	<p>carrying out individual detailed surveys. By demonstrating that DLL will be used, impacts on GCN can be scoped out of detailed assessment in the Environmental Statement.</p> <p>Priority Habitats and Species are of particular importance for nature conservation and included in the England Biodiversity List published under section 41 of the Natural Environment and Rural Communities Act 2006. Most priority habitats will be mapped either as Sites of Special Scientific Interest, on the Magic website or as Local Wildlife Sites. Lists of priority habitats and species can be found here. Natural England does not routinely hold species data. Such data should be collected when impacts on priority habitats or species are considered likely.</p> <p>Consideration should also be given to the potential environmental value of brownfield sites, often found in urban areas and former industrial land. Sites can be checked against the (draft) national Open Mosaic Habitat (OMH) inventory published by Natural England and freely available to download. Further information is also available here</p> <p>An appropriate level habitat survey should be carried out on the site, to identify any important habitats present. In addition, ornithological, botanical, and invertebrate surveys should be carried out at appropriate times in the year, to establish whether any scarce or priority species are present. The Environmental Statement should include details of:</p> <ul style="list-style-type: none"> • Any historical data for the site affected by the proposal (e.g. from previous surveys) • Additional surveys carried out as part of this proposal • The habitats and species present • The status of these habitats and species (e.g. whether priority species or habitat) • The direct and indirect effects of the development upon those habitats and species • Full details of any mitigation or compensation measures • Opportunities for biodiversity net gain or other environmental enhancement 	<p>A habitat survey has been undertaken. The results of the habitat survey are presented in Appendix ES8.1.</p> <p>The Biodiversity Net Gain Plan for the proposed development is presented at Appendix ES6.1.</p>
	Ancient woodland, ancient and veteran trees	<p>The ES should assess the impacts of the proposal on any ancient woodland, ancient and veteran trees, and the scope to avoid and mitigate for adverse impacts. It should also consider opportunities for enhancement.</p> <p>Natural England maintains the Ancient Woodland Inventory which can help identify ancient woodland. The wood pasture and parkland inventory sets out information on wood pasture and parkland.</p> <p>The ancient tree inventory provides information on the location of ancient and veteran trees.</p> <p>Natural England and the Forestry Commission have prepared standing advice on ancient woodland, ancient and veteran trees.</p>	<p>A tree survey has been undertaken and is presented at Annex 2 of Appendix ES8.1. Protection measures for trees are included where necessary.</p>
	Biodiversity Net Gain	<p>Paragraph 174 of the NPPF states that decisions should contribute to and enhance the natural and local environment by minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.</p> <p>Biodiversity Net Gain is additional to statutory requirements relating to designated nature conservation sites and protected species.</p> <p>The ES should use an appropriate biodiversity metric such as Biodiversity Metric 3.0 together with ecological advice to calculate the change in biodiversity resulting from proposed development and demonstrate how proposals can achieve a net gain. The metric should be used to:</p> <ul style="list-style-type: none"> • assess or audit the biodiversity unit value of land within the application area • calculate the losses and gains in biodiversity unit value resulting from proposed development 	<p>The Biodiversity Net Gain Plan for the proposed development is presented at Appendix ES6.1 and the completed statutory metrics (one for the consented restoration scheme and one for the proposed restoration scheme) are presented at Appendices ES6.2 and 6.3 respectively. Opportunities for nature recovery have been considered.</p>

Consultee	Subject	Specific issue raised and comments made	Comments and/or the location in the Environmental Statement or Planning Application Statement in which the issues are addressed
		<ul style="list-style-type: none"> demonstrate that the required percentage biodiversity net gain will be achieved <p>Biodiversity Net Gain outcomes can be achieved on site, off-site or through a combination of both. On-site provision should be considered first. Delivery should create or enhance habitats of equal or higher value. When delivering net gain, opportunities should be sought to link delivery to relevant plans or strategies e.g. Green Infrastructure Strategies or Local Nature Recovery Strategies.</p> <p>Opportunities for wider environmental gains should also be considered.</p>	
	Landscape and visual impacts	<p>The environmental assessment should refer to the relevant National Character Areas. Character area profiles set out descriptions of each landscape area and statements of environmental opportunity. The ES should include a full assessment of the potential impacts of the development on local landscape character using landscape assessment methodologies. We encourage the use of Landscape Character Assessment (LCA), based on the good practice guidelines produced jointly by the Landscape Institute and Institute of Environmental Assessment in 2013. LCA provides a sound basis for guiding, informing, and understanding the ability of any location to accommodate change and to make positive proposals for conserving, enhancing or regenerating character.</p> <p>A landscape and visual impact assessment should also be carried out for the proposed development and surrounding area. Natural England recommends use of the methodology set out in Guidelines for Landscape and Visual Impact Assessment 2013 ((3rd edition) produced by the Landscape Institute and the Institute of Environmental Assessment and Management. For National Parks and AONBs, we advise that the assessment also includes effects on the 'special qualities' of the designated landscape, as set out in the statutory management plan for the area. These identify the particular landscape and related characteristics which underpin the natural beauty of the area and its designation status.</p> <p>The assessment should also include the cumulative effect of the development with other relevant existing or proposed developments in the area. This should include an assessment of the impacts of other proposals currently at scoping stage.</p> <p>To ensure high quality development that responds to and enhances local landscape character and distinctiveness, the siting and design of the proposed development should reflect local characteristics and, wherever possible, use local materials. Account should be taken of local design policies, design codes and guides as well as guidance in the National Design Guide and National Model Design Code. The ES should set out the measures to be taken to ensure the development will deliver high standards of design and green infrastructure. It should also set out detail of layout alternatives, where appropriate, with a justification of the selected option in terms of landscape impact and benefit.</p>	A landscape and visual impact assessment (LVIA) for the proposed development is presented at Appendix ES10.1. The LVIA considers the relevant character areas for the sites. The LVIA has been undertaken in accordance with the Guidelines for Landscape and Visual Impact Assessment (2013) 3 rd Edition.
	Heritage landscapes	The ES should include an assessment of the impacts on any land in the area affected by the development which qualifies for conditional exemption from capital taxes on the grounds of outstanding scenic, scientific, or historic interest.	Not applicable to the proposed development.
	Connecting people with nature	<p>The ES should consider potential impacts on access land, common land, public rights of way and, where appropriate, the England Coast Path and coastal access routes and coastal margin in the vicinity of the development, in line with NPPF paragraph 100. It should assess the scope to mitigate for any adverse impacts. Rights of Way Improvement Plans (ROWIP) can be used to identify public rights of way within or adjacent to the proposed site that should be maintained or enhanced.</p> <p>Measures to help people to better access the countryside for quiet enjoyment and opportunities to connect with nature should be considered. Such measures could include reinstating existing footpaths or the creation of new footpaths, cycleways, and bridleways. Links to other green networks and, where appropriate, urban fringe areas should also be explored to help promote the creation of wider green infrastructure. Access to nature within the development site should also be considered, including the role that natural links have in connecting habitats and providing potential pathways for movements of species.</p>	<p>Potential impacts on the users of the public rights of way in the vicinity of the proposed development are considered in Appendix ES10.1. Details of the phasing of the operations is presented in Section 5 of the Environmental Statement.</p> <p>Proposals for the restoration of the site include new permissive rights of way at the site to enhance links with the wider Rights of Way network.</p>

Consultee	Subject	Specific issue raised and comments made	Comments and/or the location in the Environmental Statement or Planning Application Statement in which the issues are addressed
	Soils and Agricultural Land Quality	<p>Relevant aspects of local authority green infrastructure strategies should be incorporated where appropriate.</p> <p>Soils are a valuable, finite natural resource and should also be considered for the ecosystem services they provide, including for food production, water storage and flood mitigation, as a carbon store, reservoir of biodiversity and buffer against pollution. It is therefore important that the soil resources are protected and sustainably managed. Impacts from the development on soils and best and most versatile (BMV) agricultural land should be considered in line with paragraphs 174 and 175 of the NPPF. Further guidance is set out in the Natural England Guide to assessing development proposals on agricultural land. As set out in paragraph 211 of the NPPF, new sites or extensions to sites for peat extraction should not be granted planning permission.</p> <p>The following issues should be considered and, where appropriate, included as part of the Environmental Statement (ES):</p> <ul style="list-style-type: none"> • The degree to which soils would be disturbed or damaged as part of the development • The extent to which agricultural land would be disturbed or lost as part of this development, including whether any best and most versatile (BMV) agricultural land would be impacted. <p>This may require a detailed Agricultural Land Classification (ALC) survey if one is not already available.</p> <ul style="list-style-type: none"> • Where an ALC and soil survey of the land is required, this should normally be at a detailed level, e.g. one auger boring per hectare, (or more detailed for a small site) supported by pits dug in each main soil type to confirm the physical characteristics of the full depth of the soil resource, i.e. 1.2 metres. The survey data can inform suitable soil handling methods and appropriate reuse of the soil resource where required (e.g. agricultural reinstatement, habitat creation, landscaping, allotments and public open space). • The ES should set out details of how any adverse impacts on BMV agricultural land can be minimised through site design/masterplan. • The ES should set out details of how any adverse impacts on soils can be avoided or minimised and demonstrate how soils will be sustainably used and managed, including consideration in site design and master planning, and areas for green infrastructure or biodiversity net gain. The aim will be to minimise soil handling and maximise the sustainable use and management of the available soil to achieve successful after-uses and minimise off-site impacts. <p>Further information is available in the Defra Construction Code of Practice for the Sustainable Use of Soil on Development Sites and The British Society of Soil Science Guidance Note Benefitting from Soil Management in Development and Construction. The following additional guidance is provided for minerals and waste development.</p> <p>The ES should consider and, where appropriate, include the following:</p> <ul style="list-style-type: none"> • The methods and equipment to be used for the protection, recovery, storage, and sustainable re-use of the different types of topsoil and subsoil, including consideration of any required phasing to minimise soil handling and maximise the sustainable management of the soil. • The method of assessing whether soils are in a suitably dry condition to be handled (i.e. dry and friable), and the avoidance of soil handling, trafficking, and cultivation during the wetter winter period. • A description of the restoration criteria, including the proposed soil horizon depths and soil characteristics; normally to an overall depth of 1.2 m over an evenly graded overburden layer (or, in the case of waste reclamation, an evenly graded capping layer), suitable for the proposed end-use, including the restored ALC Grade. 	<p>For most of the areas of the sites there are no soils that remain to be stripped within the application boundary. The areas in the west of Cooks Hole have historically been worked and restored. It is considered unlikely that there will be significant soil reserves in this area that could be stripped. The stockpiles of soils that are currently in Cooks Hole will be used in the restoration of the site. The soils will be placed in accordance with the soil handling and management scheme presented at Appendix ES4.4.</p> <p>The restoration scheme is presented at Figure ES4.3 and details on the restoration are provided in Section 6 of the Environmental Statement.</p>

Consultee	Subject	Specific issue raised and comments made	Comments and/or the location in the Environmental Statement or Planning Application Statement in which the issues are addressed
		<ul style="list-style-type: none"> • The effects on land drainage, agricultural access, and water supplies, including other agricultural land in the vicinity. The impacts of the development on farm structure and viability, and on other established rural land use and interests, both during the site working period and following its reclamation. • The restoration and aftercare of the site, in line with Chapter 17 'Facilitating the Sustainable Use of Minerals' of the NPPF. • A detailed Restoration Plan illustrating the restored soil profile characteristics, landform and the intended standard of restoration including ALC Grade(s), together with details of surface features; water bodies; the availability of outfalls to accommodate future drainage requirements; and aftercare. <p>Further guidance is contained in the Defra Guidance for Successful Restoration of Mineral and Waste Sites and the Natural England guidance note Planning and aftercare advice for reclaiming land to agricultural use. Reference could also usefully be made to the Institute of Quarrying (2021) Good Practice Guide for Handling Soils in Mineral Workings which comprises separate sections, describing the typical choice of machinery and methods for handling soils at various phases. The techniques described by Sheets A-D are appropriate for the successful reinstatement of higher quality agricultural land. The Natural England Guide to reclaiming mineral extraction and landfill sites to agriculture also contains useful background information.</p>	
	Air Quality	<p>Air quality in the UK has improved over recent decades but air pollution remains a significant issue. For example, approximately 85% of protected nature conservation sites are currently in exceedance of nitrogen levels where harm is expected (critical load) and approximately 87% of sites exceed the level of ammonia where harm is expected for lower plants (critical level of 1µg). A priority action in the England Biodiversity Strategy is to reduce air pollution impacts on biodiversity. The Government's Clean Air Strategy also has a number of targets to reduce emissions including to reduce damaging deposition of reactive forms of nitrogen by 17% over England's protected priority sensitive habitats by 2030, to reduce emissions of ammonia against the 2005 baseline by 16% by 2030 and to reduce emissions of NOx and SO2 against a 2005 baseline of 73% and 88% respectively by 2030. Shared Nitrogen Action Plans (SNAPs) have also been identified as a tool to reduce environmental damage from air pollution.</p> <p>The planning system plays a key role in determining the location of developments which may give rise to pollution, either directly, or from traffic generation, and hence planning decisions can have a significant impact on the quality of air, water and land. The ES should take account of the risks of air pollution and how these can be managed or reduced. This should include taking account of any strategic solutions or SNAPs, which may be being developed or implemented to mitigate the impacts on air quality. Further information on air pollution impacts and the sensitivity of different habitats/designated sites can be found on the Air Pollution Information System (www.apis.ac.uk).</p> <p>Information on air pollution modelling, screening and assessment can be found on the following websites:</p> <ul style="list-style-type: none"> • SCAIL Combustion and SCAIL Agriculture - http://www.scail.ceh.ac.uk/ • Ammonia assessment for agricultural development https://www.gov.uk/guidance/intensive-farming-risk-assessment-for-your-environmental-permit • Environment Agency Screening Tool for industrial emissions https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit • Defra Local Air Quality Management Area Tool (Industrial Emission Screening Tool) – England http://www.airqualityengland.co.uk/laqm 	Traffic air quality was screened out of the Environmental Statement (see Appendix ES2.2). The potential impacts as a result of dust from the proposed development are addressed in Section 14 of the Environmental Statement.
	Water Quality	The planning system plays a key role in determining the location of developments which may give rise to water pollution, and hence planning decisions can have a significant impact on water quality, and land. The assessment should take account of the risks of water pollution and how these can be	The management of surface water during the operations and following restoration is presented in Appendix ES4.1 and summarised in Section 11 of the Environmental Statement.

Consultee	Subject	Specific issue raised and comments made	Comments and/or the location in the Environmental Statement or Planning Application Statement in which the issues are addressed
		<p>managed or reduced. A number of water dependent protected nature conservation sites have been identified as failing condition due to elevated nutrient levels and nutrient neutrality is consequently required to enable development to proceed without causing further damage to these sites. The ES needs to take account of any strategic solutions for nutrient neutrality or Diffuse Water Pollution Plans, which may be being developed or implemented to mitigate and address the impacts of elevated nutrient levels.</p>	
	Climate change	<p>The ES should identify how the development affects the ability of the natural environment (including habitats, species, and natural processes) to adapt to climate change, including its ability to provide adaptation for people. This should include impacts on the vulnerability or resilience of a natural feature (i.e. what's already there and affected) as well as impacts on how the environment can accommodate change for both nature and people, for example whether the development affects species ability to move and adapt. Nature-based solutions, such as providing green infrastructure on-site and in the surrounding area (e.g. to adapt to flooding, drought and heatwave events), habitat creation and peatland restoration, should be considered. The ES should set out the measures that will be adopted to address impacts</p> <p>Further information is available from the Committee on Climate Change's (CCC) Independent Assessment of UK Climate Risk, the National Adaptation Programme (NAP), the Climate Change Impacts Report Cards (biodiversity, infrastructure, water etc.) and the UKCP18 climate projections.</p> <p>The Natural England and RSPB Climate Change Adaptation Manual (2020) provides extensive information on climate change impacts and adaptation for the natural environment and adaptation focussed nature-based solutions for people. It includes the Landscape Scale Climate Change</p> <p>Assessment Method that can help assess impacts and vulnerabilities on natural environment features and identify adaptation actions. Natural England's Nature Networks Evidence Handbook (2020) also provides extensive information on planning and delivering nature networks for people and biodiversity.</p> <p>The ES should also identify how the development impacts the natural environment's ability to store and sequester greenhouse gases, in relation to climate change mitigation and the natural environment's contribution to achieving net zero by 2050.</p>	<p>The potential effects due to climate change have been addressed in the flood risk assessment presented at Section 11 of the Environmental Statement.</p>
	Contribution to local environmental initiatives and priorities	<p>The ES should consider the contribution the development could make to relevant local environmental initiatives and priorities to enhance the environmental quality of the development and deliver wider environmental gains. This should include considering proposals set out in relevant local strategies or supplementary planning documents including landscape strategies, green infrastructure strategies, tree and woodland strategies, biodiversity strategies or biodiversity opportunity areas.</p>	<p>The Biodiversity Net Gain Plan for the proposed development is presented at Appendix ES6.1 and the completed statutory metrics (one for the consented restoration scheme and one for the proposed restoration scheme) are presented at Appendices ES6.2 and 6.3 respectively. Opportunities for nature recovery have been considered.</p>
Pollution officer (PCC)	Noise	<p>As included in the scoping document, noise limits at the identified near sensitive receptors for the operations at Cooks Hole are specified planning permissions referenced 15/00229/MMFUL, 13/01372/WCMM and 13/01374/WCMM. Where the existing noise limits provide sufficient protection. As set out in Sections 5.14 - 5.17 of the document a noise assessment considering the noise impact of the proposed operations will be necessary. The results will be presented against the existing noise limits for the site.</p>	<p>A compliance noise assessment has been undertaken against the existing noise limits and is presented at Appendix ES13.2. A noise impact assessment for the proposed development has been undertaken and is presented at Appendix ES13.1.</p>
	Dust and particulates	<p>Section 5.20 of the document by MJCA states " The annual background PM10 concentration for both sites in 2021 was 13.93µg/m³ which is well below the national air quality objective for PM10. As the background annual PM10 concentration for the site is below 17µg/m³ (the screening value specified in the IAQM guidance for potential health effects) there is little risk that the process contribution from the proposed development would lead to an exceedance of the annual mean air quality objective for PM10 hence an assessment for the potential for dust to affect human health will not be undertaken and is not included in the scope of the EIA."</p>	<p>An assessment of the effects on amenity including dust is presented at Section 14 of this Environmental Statement. The dust assessment has been undertaken generally in accordance with the Planning Practice Guidance Note for Minerals and the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Mineral Dust Impacts for Planning. The methodology used for the assessment of impacts from dust is presented in Appendix ES14.1</p>

Consultee	Subject	Specific issue raised and comments made	Comments and/or the location in the Environmental Statement or Planning Application Statement in which the issues are addressed
		<p>PM10 has been considered previously with respect to current operations and has not been identified as a significant risk to human health that requires further assessment as part of the proposals for the site.</p> <p>As set out in sections 5.21 and 5.22 of the document, a dust assessment will be required to determine potential dust impacts and detail the proposed mitigation measures.</p>	<p>The methodology, baseline, environmental effects and mitigation measures in regards to dust are presented in Section 14 of this Environmental Statement. Dust impacts have the potential to occur mainly within 400m of the operation, even at the dustiest of sites. The magnitude of dust impact at each of the sensitive dust receptors within 400m of the site boundary has been assessed and the results of the assessment are presented at Table ES14.2. The locations of the receptors are shown on Figure ES14.1.</p>
Tree officer (PCC)	Tree protection	I'm happy to accept the submitted detail and proposals within the Scoping Report and have no further comment to make at this time.	<p>Noted.</p> <p>A tree survey has been undertaken and is presented at Annex 2 of Appendix ES8.1. Protection measures for trees are included where necessary.</p>
Wildlife officer	Ecology	<p>I agree with the proposed potential impacts of the development outlined within the EIA Scoping Report (MJCA, October 2023) and agree that the baseline as described represents a realistic depiction of the surrounding habitat.</p> <p>In respect to the ecological aspects of the proposal I agree with the EIA Scoping Report that an EIA is required and the scoped in aspects represent the full potential impacts of the development.</p>	<p>The Ecological Impact Assessment is presented at Appendix ES8.1 and summarised in Section 8 of this Environmental Statement. The results of the surveys are presented in Annex 1 to Appendix ES8.1.</p> <p>The Biodiversity Net Gain Plan for the proposed development is presented at Appendix ES6.1 and the completed statutory metrics (one for the consented restoration scheme and one for the proposed restoration scheme) are presented at Appendices ES6.2 and 6.3 respectively. Opportunities for nature recovery have been considered.</p>

Table ES4.1

Description of the currently approved development for Cooks Hole Quarry and Thornhaugh Landfill Site and the proposed changes as a result of the proposed development

The boundaries of the planning permissions are shown on Figure PS4.1 in the Planning Statement

Currently approved development at Cooks Hole	Proposed changes at the sites
<p>Planning permission references 13/01372/WCMM and 13/01374/WCMM</p>	
<p>The winning and working of minerals shall not take place outside the limit of excavation shown on Figure 1.8 in the application Environmental Statement Volume 1 (dated October 2012)</p>	<p>Other than the mineral stockpiled at the site the mineral at the site has been exhausted. There are no further viable reserves at the site. No further mineral extraction will be undertaken at Cooks Hole.</p>
<p>No blasting shall take place at the site</p>	<p>No changes proposed.</p>
<p>Operational hours 0600 to 1900 hours Mondays to Fridays 0700 to 1300 hours Saturdays</p> <p>Between 1800 and 1900 Monday to Friday and 0700 and 0800 on Saturday operations shall be limited to loading vehicles from stockpiles, traffic movements associated with the collection of minerals and associated environmental control and administrative activities. Between 0600 and 0700 Monday to Friday operations shall be limited to traffic movements only.</p>	<p>The operational hours for the sites will be consistent with the current operational hours for Thornhaugh:</p> <p>0700 to 1800 Monday to Friday 0700 to 1300 Saturdays</p> <p>Except for the operation of maintenance and control equipment including gas, leachate and water management in Thornhaugh and emergency maintenance works.</p>
<p>Any lighting erected on the site shall be in accordance with a lighting scheme</p>	<p>A lighting scheme has not been submitted for Cooks Hole to date other than for a historical parking area. A lighting scheme for the proposed development is presented at</p>

Currently approved development at Cooks Hole	Proposed changes at the sites
	Appendix ES4.2 and covers the operations at Cooks Hole and Thornhaugh.
<p>No vehicular access to the Public Highway shall be used in connection with the development other than:</p> <ul style="list-style-type: none"> • The entrance serving Thornhaugh • The existing track linking Cooks Hole Farm to the A47 shall only be used in connection with agriculture, after care and or after use purposes only. 	<p>There are no changes proposed to the access arrangements for the importation and export of materials.</p> <p>The track from the existing access on the A47 to Cooks Hole Farmhouse will be retained for after care and after use purposes.</p> <p>A small car park will be constructed adjacent to the access from the A47 for Cooks Hole.</p>
<p>Prior to the winning and working of minerals the sub and topsoil will be stripped and stored.</p>	<p>There will be no further winning of minerals at the site.</p> <p>Naturally occurring materials (including imported soils and soil forming materials) will be stored prior to placement and stockpiles will be formed and maintained as necessary.</p> <p>The mineral which is stockpiled on Cooks Hole and which is extracted from Thornhaugh during cell construction will be processed using mobile processing plant.</p>
<p>Following completion of mineral extraction the void shall be graded to the final levels shown on Figure 4.9 (Rev B) and Figure 4.12. The soils present on site will be respread to depths agreed with the Minerals Planning Authority. <i>[Note the final levels on these plans were changed by subsequent planning permissions]</i></p>	<p>The proposed integrated restoration profile is presented on Figure ES4.1.</p> <p>Naturally occurring materials (including imported soils and soil forming materials) will be stored prior to placement and stockpiles will be formed and maintained as necessary.</p> <p>The soils which are currently stockpiled on site will be placed following the placement of the imported naturally occurring materials.</p>

Currently approved development at Cooks Hole	Proposed changes at the sites
The development shall be carried out in accordance with the details on the mineral processing plant in Volume 4 of the Environmental Statement	The mineral which is stockpiled on Cooks Hole and which is extracted from Thornhaugh during cell construction will be processed using mobile processing plant.
The development shall be completed by 21 February 2042	No change is proposed to the end date. It is proposed that 21 February 2042 is the end date for all operations and the completion of restoration at the sites.
Approved schemes under planning permission references 13/01372/WCMM and 13/01374/WCMM	
Dust scheme set out in Appendix B of the application supporting statement dated 29 September 2010	The operational controls for the management of dust are presented at Table ES14.3. The control and monitoring of emissions of particulates including dust at Thornhaugh will be regulated through the Environmental Permit.
The development hereby approved shall be carried out in complete accordance with the Ecological Management Plan Revision 3 (dated 13 November 2012)	<p>Details of the habitats that will be created are presented in the Biodiversity Net Gain Plan which is presented at Appendix ES6.1.</p> <p>The details of the management and monitoring of the habitats and species will be provided in a habitat management and monitoring scheme which will be submitted under an appropriately worded planning condition.</p> <p>The scheme will cover Cooks Hole and Thornhaugh and reflect the changes as a result of the proposed development.</p>

Currently approved development at Cooks Hole	Proposed changes at the sites
The development hereby approved shall be carried out in complete accordance with the scheme for the management of surface water and ground (dated July 2011) in Volume 4 of the updated Environmental Statement (dated October 2021) based upon the mitigation measures proposed in the Hydrogeological and Hydrological Impact assessment included at Volume 3 Appendix F of the Environmental Statement.	The drainage and surface water management strategy for the proposed development is presented at Appendix ES4.1. The strategy is for the operation and the restored sites at Cooks Hole and Thornhaugh.
Scheme for tree and hedge protection measures in the Environmental Statement Volume 4 dated October 2012 (drawing re D130030-TPM-01 Rev B dated 09/08/2011)	An arboricultural assessment has been undertaken and is presented at Annex 2 of Appendix ES8.1. The measures specified in the assessment are set out in the tree protection scheme presented at Appendix ES4.3 and will be implemented during the proposed development.
The development shall be carried out in complete accordance with the Written Scheme of Investigation for Archaeological Works (dated August 2011) in the Environmental Statement Volume 4 dated October 2012.	All the viable mineral has now been extracted from the site. The proposed development will not result in any direct impacts on below ground archaeology. A Written Scheme of Investigation is not necessary for the proposed development.
The development shall be carried out in accordance with the Landscaping and Aftercare Scheme (dated November 2011 and accompanying drawing ref Figure 1 Restoration Masterplan for Aftercare Schedules in the Environmental Statement Volume 4 (dated October 2012)	The Habitat Management and Monitoring Plan will be submitted under an appropriately worded planning condition to reflect the changes as a result of the proposed development. The integrated scheme will cover both Cooks Hole and Thornhaugh and will include landscaping management.
The development hereby approved shall be carried out in complete accordance with the landscape scheme for the treatment of frontage of the site with the A47, drawing ref D130030-PL-A47-01(dated 09/08/2011) in the Environmental Statement Volume 4 (dated October 2012)	The frontage planting on the eastern edge of Cooks Hole has been undertaken and is fenced. Maintenance of the planting will be included in the habitat management and monitoring scheme.

Currently approved development at Cooks Hole	Proposed changes at the sites
<p>The development shall be carried out in accordance with the scheme for the maintenance of Safety of PROW users in Volume 4 of the Environmental Statement (dated October 2012), the footpath diversion corridors and details drawing ref D130030-fpd-01 (dated 9/08/2011) and alternative access details drawing ref Figure AA3a.</p>	<p>The rights of way will be diverted as necessary as a result of the proposed development. The footpaths at each stage of the development are presented on Figure ES3.3.</p>
<p>Bunds and mounds of soil stored within the site shall be managed in accordance with the details in Appendix K – Adams Land Management Report September 2010. The soil bunds and mounds shall be seeded with the approved native grass mix in accordance with the details contained within the ES Volume 4 Discharge of Conditions 26&27 dated 16/09/2011.</p>	<p>The soils that remain on site will be stored and managed in accordance with the soil handling, storage and management plan presented at Appendix ES4.4.</p>
<p>Planning permission reference 15/00229/MMFUL [North eastern corner of Cooks Hole]</p>	
<p>Hours of operation 0700 to 1700 Monday to Friday 0700 to 1300 Saturdays No operations outside of these hours. Between 0700 and 0800 on Saturday, operations shall be limited to loading vehicles from stockpiles, and associated environmental control and administrative activities.</p>	<p>The operational hours for the sites will be consistent with the current operational hours for Thornhaugh:</p> <p>0700 to 1800 Monday to Friday 0700 to 1300 Saturdays</p> <p>Except for the operation of maintenance and control equipment including gas, leachate and water management in Thornhaugh and emergency maintenance works.</p>
<p>The development hereby approved shall be carried out in complete accordance with the scheme for the crossing of the Public Right of Way as depicted on Figure TCH6 dated 12/14.</p>	<p>The rights of way will be diverted as necessary as a result of the proposed development. The footpaths at each stage of the development are presented on Figure ES3.3.</p>
<p>The only materials to be accepted on site are mineral wastes and inert wastes imported directly from Thornhaugh I.</p>	<p>The materials that will be used to create the restoration landform at Cooks Hole will comprise clean, excavated naturally occurring</p>

Currently approved development at Cooks Hole	Proposed changes at the sites
	materials from the construction operations at ENRMF and Thornhaugh only.
Any trees, shrubs or hedges forming part of the approved landscaping scheme that die, are removed or become diseased within five years of the implementation of the landscaping scheme shall be replaced during the next available planting season by the developers, or their successors in title with an equivalent size, number and species to those being replaced. Any replacement trees, shrubs or hedgerows dying within five years of planting shall themselves be replaced with an equivalent size, number and species.	No changes proposed. Maintenance of the landscape planting will be included in the proposed habitat management and monitoring scheme.
The development shall be completed no later than 31 December 2034.	The duration of the operation and restoration of the sites will continue to 21 February 2042 consistent with the current completion date for the Cooks Hole site.
Approved schemes under planning permission reference 15/00229/MMFUL	
Any lighting erected on site shall be in accordance with a lighting scheme that shall have been submitted to and approved by the Local Planning Authority.	A lighting scheme has not been submitted for Cooks Hole to date other than for a historical parking area. A lighting scheme for the proposed development is presented at Appendix ES4.2 and covers the operations at Cooks Hole and Thornhaugh.
Dust generated by the development hereby approved shall be controlled in accordance with the scheme at Annexe 3 of the Environmental Statement dated February 2015.	A dust assessment has been undertaken for the proposed development. The operational controls for dust are presented at Table ES14.3. The control and monitoring of emissions of particulates including dust at Thornhaugh will be regulated through the Environmental Permit.
The development hereby approved shall be carried out in complete accordance with the; Scheme for the management of surface water and groundwater dated July 2011, Extract NCB report, Appendix F: Hydrogeology and Hydrology dated September 2010, Figure F3.2	The drainage and surface water management strategy for the proposed development is presented at Appendix ES4.1. The strategy is

Currently approved development at Cooks Hole	Proposed changes at the sites
	for the operational and the restored sites at Cooks Hole and Thornhaugh.
<p>The development hereby approved shall be carried out in complete accordance with the Ecological Management Plan Revision 3 (Dated 13 November 2012), and the additional mitigation measures as set out in Appendix E of the Environmental statement dated February 2015</p>	<p>Details of the habitats that will be created are presented in the Biodiversity Net Gain Plan which is presented at Appendix ES6.1</p> <p>The details of the management and monitoring of the habitats and species will be provided in a Habitat Management and Monitoring Scheme which will be submitted under an appropriately worded planning condition.</p> <p>The scheme will cover Cooks Hole and Thornhaugh and reflect the changes as a result of the proposed development.</p>
<p>Prior to commencement of development a detailed landscape and aftercare scheme based on the Proposed Restoration Masterplan, Figure TCH7 dated 12/14 shall be submitted to and approved by the Local Planning Authority. Thereafter, the development shall be carried out in complete accordance with the approved scheme. <i>[On 23 July 2018 the Landscaping and Aftercare Scheme dated November 2011 was approved for this condition]</i></p>	<p>Details of the landscaping and aftercare for the habitats proposed as part of the development will be set out in a Habitat Management and Monitoring Plan submitted under an appropriately worded planning condition.</p>
<p>Planning permission reference 15/01708/NONMAT</p>	
<p>No vehicular access to the Public Highway shall be used in connection with the development hereby approved other than: the existing track linking Cook's Hole Farm to the A47, and the link to the entrance serving Thornhaugh I Quarry permitted through planning permission number 10/01442/MMFUL, or via Access route B as shown on drawing number C28/15/201 dated 07/10/2015.</p>	<p>There are no changes proposed to the access arrangements. The track from the A47 to Cooks Hole Farmhouse will be retained for aftercare and afteruse purposes. A small car park will be constructed adjacent to the access from the A47 for Cooks Hole.</p>

Currently approved development at Cooks Hole	Proposed changes at the sites
<p>The existing track linking Cook's Hole Farm to the A47 shall be used in connection with agricultural, after-care and/or after-use purposes only.</p>	
<p>Planning permission references 20/00977/NONMAT and 20/00978/NONMAT</p>	
<p>Following the completion of mineral extraction within each phase shown on Figure 1.8 (in the Environmental Statement Volume 1 dated October 2012) the resultant void shall be graded to achieve the final levels shown on "Proposed Revised Restoration Contours", drawing number C28/8/20/207, Rev E, dated 07/09/20, with the exception of the area subject of planning permission 15/00229/MMFUL, and the processing area (drawing ref. C28/15/201 dated 07.10.2015) which shall be graded to achieve the final levels shown on "Proposed Revised Restoration Contours" The soils present on site will be respread to depths agreed with the Minerals Planning Authority.</p>	<p>The proposed integrated restoration profile is presented on Figure ES4.1. Naturally occurring materials (including imported soils and soil forming materials) will be stored prior to placement and stockpiles will be formed and maintained as necessary. The soils which are currently stockpiled on site will be placed following the grading of the imported naturally occurring materials.</p>

Currently approved development at Thornhaugh	Proposed changes at the sites
<p>Planning permission reference 12/00463/MMFUL</p>	
<p>The development shall only be carried out in accordance with the approved phasing plan.</p> <p>Each phase shall be restored within one year of the landfill operations within that phase being completed.</p>	<p>The phasing of the landfilling, capping and restoration will be undertaken as shown on Figure ES 4.2</p> <p>The phasing of the proposed development is shown on Figure ES4.2. The phases will be capped as soon as practicable following the completion of the landfilling operations. The restoration will be undertaken as soon as possible following capping.</p>
<p>Topsoil and subsoil shall be stripped and stored in separate mounds. No topsoil or subsoil shall be removed from the site.</p> <p>The material stored in the temporary stockpile in Cooks Hole shall be used to achieve the restoration of the remainder of the site.</p>	<p>Naturally occurring materials (including imported soils and soil forming materials) will be stored prior to placement and stockpiles will be formed and maintained as necessary. All soils stored on site will be used in restoration of the site.</p>
<p>Site access from the A47</p>	<p>No changes proposed. All vehicles associated with the operational and restoration phases of the development will use the existing access from the A47.</p>
<p>Wheel cleaning facilities shall be retained on site in a location adjacent to the hard surfaced access into the site.</p>	<p>No changes are proposed, wheel cleaning facilities shall continue to be retained on site in a location adjacent to the hard surfaced access into the site.</p> <p>The wheel wash will be relocated as necessary in response to the phases of the development.</p>
<p>Adequate space for parking, turning, loading, unloading of all vehicles associated with that phase of operation, restoration or recycling</p>	<p>No changes proposed.</p>

Currently approved development at Thornhaugh	Proposed changes at the sites
<p>Hours of operation 0700 to 1800 Monday to Friday 0700 to 1300 Saturdays No operations outside of these hours except for environmental monitoring.</p>	<p>No changes proposed.</p> <p>The operational hours for the sites will be consistent with the current operational hours for Thornhaugh:</p> <p>0700 to 1800 Monday to Friday 0700 to 1300 Saturdays</p> <p>Except for the operation of maintenance and control equipment including gas, leachate and water management in Thornhaugh and emergency maintenance works.</p>
<p>Only inert construction and demolition waste types shall be processed through the recycling operation</p>	<p>No changes proposed. Mineral and clean construction and demolition waste types extracted during the construction of the landfill cells will be processed on site for use or recovery on site or elsewhere.</p>
<p>The recycling, processing and stockpiling of materials awaiting processing and finished materials for sale will be confined to the area shaded on the approved drawing SES 2.3 but notwithstanding this no stockpiles (both received and processed material) shall be stored below the water table or in areas susceptible to flooding. The stockpiles shall not exceed the pre-settlement levels shown on Figures ES4.2 and ES4.5 by more than 3 metres and each stockpile shall not exceed an overall height of 5 metres.</p>	<p>There will be temporary stockpiling of materials on the sites. The materials that will be stockpiled at the sites include:</p> <ul style="list-style-type: none"> ● engineering materials, ● naturally occurring excavated materials from ENRMF and Thornhaugh, ● materials extracted from Thornhaugh during the construction of the landfill cells which are awaiting processing and/or recovery or use, ● minerals historically extracted from Cooks Hole awaiting and following processing,

Currently approved development at Thornhaugh	Proposed changes at the sites
	<ul style="list-style-type: none"> • minerals extracted from Thornhaugh during cell construction and • restoration materials (including imported soils and soil forming materials). <p>The size of the stockpiles will depend on the materials that are being stocked. No stockpiles will exceed the height of the proposed consented restoration contours.</p>
<p>The footpaths shall be reinstated and provided in complete accordance with the details shown on drawing ES 4.1 within 6 months of the final phase of the development being landscaped and shall be retained as such thereafter.</p>	<p>The footpaths will be reinstated within 6 months of the final phase of the restored development being landscaped. The footpaths are shown on Figure ES3.3</p>
<p>The landfill of the site shall be completed by 31st December 2028 and restoration of the site shall be completed no later than 31st December 2029.</p>	<p>The end date of the landfilling operations and the restoration of the sites will be consistent with the currently consented timescales for Cooks Hole. All site operations and restoration shall be completed by 21 February 2042.</p>
<p>Unless required for continued environmental monitoring purposes, all buildings, plant and machinery and hardstanding ("the site infrastructure") shall be permanently removed from the site within 6 months of the final landscaping taking place</p>	<p>No changes are proposed.</p>
<p>Planning permission reference 20/01680/WCMM</p>	
<p>The footpaths shall be reinstated and provided in complete accordance with the details shown on drawing TLS 6, Rev A, dated 29/03/2017, within 6 months of the final phase of the development being landscaped and shall be retained as such thereafter.</p>	<p>The footpaths will be reinstated within 6 months of the final phase of development being landscaped. The footpaths are shown on Figure ES3.3</p>
<p>Phased development, filling, capping and restoration of the landfill areas as shown on phasing scheme drawings in the 2020 application (drawing references AU/TH/09-20/21960 to AU/TH/09-20/21970)</p>	<p>The phasing of the landfilling and restoration activities will be undertaken as shown on Figure ES 4.2.</p>

Currently approved development at Thornhaugh	Proposed changes at the sites
	The order of capping and restoration of the landfill areas are shown on Figure ES4.2
Each phase shall be restored within one year of the landfill operations within that phase being completed	The phasing of the proposed development is shown on Figure ES4.2. The phases will be capped as soon as practicable following the completion of the landfilling operations. The restoration will be undertaken as soon as practicable following capping once the restoration profile has been achieved for each area. The phasing of the operations will be reviewed every 2 years and an update will be provided to Peterborough City Council on the progress of the operations and the expected operations in the following 2 years.
Site access from the A47	No changes proposed. All vehicles associated with the operational and restoration phase of the development will continue to use the existing access from the A47.
Wheel cleaning facilities shall be retained on site in a location adjacent to the hard surfaced access into the site.	No changes are proposed, wheel cleaning facilities shall continue to be retained on site in a location adjacent to the hard surfaced access into the site. The wheel wash will be relocated as necessary in response to the phases of the development.
Adequate space for parking, turning, loading, unloading of all vehicles associated with that phase of operation, restoration or recycling	No changes proposed.
Hours of operation 0700 to 1800 Monday to Friday 0700 to 1300 Saturdays	No changes proposed.

Currently approved development at Thornhaugh	Proposed changes at the sites
<p>No operations outside of these hours except for emergency maintenance</p>	<p>The operational hours for the sites will be consistent with the current operational hours for Thornhaugh:</p> <p>0700 to 1800 Monday to Friday 0700 to 1300 Saturdays</p> <p>Except for the operation of maintenance and control equipment including gas, leachate and water management in Thornhaugh and emergency maintenance works.</p>
<p>Only inert construction and demolition waste types shall be processed through the recycling operation</p>	<p>No changes proposed. Only mineral and clean construction and demolition waste types will be processed on site for use or recovery on site or elsewhere.</p>
<p>The recycling, processing and stockpiling of materials awaiting processing and finished materials for sale will be confined to the area shaded on the approved drawing SES 2.3 but notwithstanding this no stockpiles (both received and processed material) shall be stored below the water table or in areas susceptible to flooding. The stockpiles shall not exceed the pre-settlement levels shown on Figure TLS5 by more than 3 metres and each stockpile shall not exceed an overall height of 5 metres.</p>	<p>There will be temporary stockpiling of materials on the sites. The materials that will be stockpiled at the sites include:</p> <ul style="list-style-type: none"> ● engineering materials, ● naturally occurring excavated materials from ENRMF and Thornhaugh, ● materials extracted from Thornhaugh during the construction of the landfill cells which are awaiting processing and/or recovery or use, ● minerals historically extracted from Cooks Hole awaiting and following processing, minerals extracted from Thornhaugh during cell construction and

Currently approved development at Thornhaugh	Proposed changes at the sites
	<ul style="list-style-type: none"> restoration materials (including imported soils and soil forming materials). <p>The size of the stockpiles will depend on the materials that are being stocked. No stockpiles will exceed the height of the proposed consented restoration contours.</p>
The temporary storage of Hi-pod containers in a concrete surfaced central area of the site.	No change proposed. The storage area may be relocated as necessary in response to the phases of the development.
The approved date for cessation of landfilling and completion of restoration are 31 December 2034 and 31 December 2035 respectively.	The end date of the landfilling operations and the restoration of the sites will be extended to be consistent with the currently consented timescales for Cooks Hole All site operations and restoration shall be completed by 21 February 2042
Unless required for continued environmental monitoring purposes, all buildings, plant and machinery and hardstanding ("the site infrastructure") shall be permanently removed from the site within 6 months of the final landscaping taking place	No changes are proposed.
Any trees, shrubs or hedges forming part of the approved landscaping scheme that die, are removed or become diseased within five years of the implementation of the landscaping scheme shall be replaced during the next available planting season by the developers, or their successors in title, with an equivalent size, number and species to those being replaced. Any replacement trees, shrubs or hedgerows dying within five years of planting shall themselves be replaced with an equivalent size, number and species.	No changes proposed. Maintenance of the landscape planting will be included in the proposed habitat management and monitoring scheme.
Approved schemes under planning permission reference 20/01680/WCMM	
The development shall be carried out in complete accordance with the Landscaping Scheme as set out on the Phased Restoration Scheme drawing ref. TLS6, Rev A, dated	A Habitat Management and Monitoring Scheme will be submitted under an appropriately worded planning condition to

Currently approved development at Thornhaugh	Proposed changes at the sites
29/03/2017, with each phase to be landscaped within 12 months of restoration being completed.	reflect the proposed development. The integrated scheme will cover both Cooks Hole and Thornhaugh.
The development hereby approved shall be carried out in complete accordance with the details of the Ecological Management Plan dated April 2013, included at Annex 7 of the Environmental Statement dated February 2015.	<p>Details of the habitats that will be created are presented in the Biodiversity Net Gain Plan which is presented at Appendix ES6.1.</p> <p>The details of the management and monitoring of the habitats and species will be provided in a habitat management and monitoring scheme which will be submitted under an appropriately worded planning condition.</p> <p>The scheme will cover Cooks Hole and Thornhaugh and reflect the changes as a result of the proposed development.</p>
The approved scheme for external lighting (17/007/26/WCMM Lighting Scheme dated March 2017 included at Appendix D of the Environmental Statement dated March 2017.)	A lighting scheme for the proposed development is presented at Appendix ES4.2. The lighting scheme has been updated to reflect the changes as a result of the proposed development and includes details on the mobile lighting used at the sites.
The development hereby approved shall be carried out in complete accordance with the mitigation measures outlined in Section 7 of the Environmental Statement dated February 2015 and the Dust and Odour Control Scheme dated April 2013 included at Annex 3 of the Environmental Statement dated February 2015.	<p>A dust assessment has been undertaken for the proposed development. The operational controls for dust are presented at Table ES14.3.</p> <p>The control and monitoring of emissions of particulates including dust at Thornhaugh will</p>

Currently approved development at Thornhaugh	Proposed changes at the sites
	<p>be regulated through the Environmental Permit.</p> <p>The control and monitoring of emissions of odour at Thornhaugh will be regulated through the Environmental Permit.</p>
<p>The development hereby approved shall be carried out in complete accordance with the Flood Risk Assessment (FRA) (MJCA, ref AU/TH/JRC/2826/01 FRA, dated December 2014) included at Appendix G of the Environmental Statement dated February 2015.</p>	<p>A Flood Risk Assessment for the proposed development has been undertaken and is presented at Section 11.</p> <p>The drainage and surface water management strategy for the proposed development is presented at Appendix ES4.1.</p>
<p>The development hereby approved shall be carried out in complete accordance with the Aftercare / Ecological Management Plan dated February 2014 included at Annex 5 of the Environmental Statement.</p>	<p>Details of the habitats that will be created are presented in the Biodiversity Net Gain Plan which is presented at Appendix ES6.1.</p> <p>The details of the management and monitoring of the habitats and species will be provided in a Habitat Management and Monitoring Scheme which will be submitted under an appropriately worded planning condition.</p> <p>The scheme will cover Cooks Hole and Thornhaugh and reflect the changes as a result of the proposed development.</p>

Currently approved development at Thornhaugh	Proposed changes at the sites
The development hereby approved shall be carried out in complete accordance with the Noise Monitoring Scheme dated April 2013 as set out at Annexe 6 of the Environmental Statement.	An updated version of the noise monitoring scheme for the sites is presented at Appendix ES4.5. The noise limits remain the same as those previously permitted for the operations at Cooks Hole and Thornhaugh.
Permitted activities not explicitly referred to in planning conditions for Thornhaugh	Proposed changes at the sites
The excavation of waste from Phases 1 and 2 for disposal in engineered containment landfill cells and the use of excavated minerals and other suitable materials either in the landfill or for export from the site	There are no changes proposed to the currently consented excavation of waste from Phases 1 and 2 and for the disposal of contaminated waste in engineered containment landfill cells at Thornhaugh. The excavation works are consented and will be regulated through the Environmental Permit.
Landfill cell engineering containment measures for Phases 1, 2, 4 and 7	Engineering containment measures will continue to be constructed as specified in the Environmental Permit for all continuing and remaining landfill areas.
The access road to Cooks Hole Quarry will be diverted through Phase 2 East and Phase 4C East prior to extraction work commencing in Phase 1 East with no need for it to be returned to the original alignment	There is a need to provide continued access to Cooks Hole when operations commence in Phase 1 East of Thornhaugh. Access will be provided over the other landfill areas as necessary.
The permitted waste types which can be accepted comprise non hazardous waste, stable non-reactive hazardous waste, asbestos, gypsum and other high sulphate bearing wastes	There are no changes proposed to the waste types that can be accepted at Thornhaugh. The waste types which can be accepted at the site are specified in the Environmental Permit.
A non hazardous waste and stable non reactive hazardous waste input rate of 75,000tpa	The waste input rate to Thornhaugh has increased. The input rate for non hazardous

Permitted activities not explicitly referred to in planning conditions for Thornhaugh	Proposed changes at the sites
	waste and stable non reactive waste will be up to 120,000 tonnes per annum.
Up to 28,000 tonnes per annum of construction, excavation and demolition waste will be imported to create restoration soils	No change is proposed.
The relocation of the site welfare facilities to near the site offices during the development of Phase 4B	The buildings have been relocated. The buildings will be relocated as necessary in response to the phases of the development.
The relocation of the landfill gas flare from Phase 2 West to a permanent location north of Phase 7A towards the end of development in phase 4C North	The gas flare will be retained on site as required by the Environmental Permit. The permanent location of the gas flare on the restored site will be as shown on Figure ES3.2. During the landfilling and operational period the gas flare may be relocated to temporary position(s) in order to reflect the phased nature of the landfilling and restoration operations.
Periodic use of crushing and processing plant to produce restoration soils and engineering materials	No changes proposed.
Export of recycled materials off site	No changes proposed.
Temporary leachate storage in accordance with the Environmental Permit followed by removal from site by tanker for treatment and disposal	No changes are proposed.

Table ES4.2

Mitigation measures identified in the Environmental Statement for the proposed development

Environmental Statement section	Mitigation measures	Method of securing the mitigation
	Identification and implementation of a Root Protection Area.	The Construction Exclusion Zones (based on the Root Protection Areas) within the sites together with the appropriate protection measures are presented in the Tree Protection Scheme which is presented at Appendix ES4.3. It is anticipated that implementation of the Tree Protection Scheme will be secured through a condition of the planning permission.
	Phased operation and restoration	The site operations and final restoration will be phased as shown on Figure ES4.2. The final restoration will be undertaken as soon as practicable once the restoration profile has been achieved for each area. The phasing of the operations will be reviewed on a bi-annual basis and an update will be provided to Peterborough City Council on the progress of the operations and the expected operations in the following 2 years. The principles of the phased operations are shown on Figure ES4.2.
	Creation of ponds for great crested newts (GCNs)	Twelve GCN ponds will be created as part of the proposed development as shown on Figure ES4.3. The creation of the ponds will be undertaken under the terms of a European Protected Species Licence (EPSL). The management of the GCN ponds and surrounding habitats will be set out in the Habitat Management and Maintenance Plan under the EPSL. It is anticipated that implementation of the Habitat Management and Monitoring Plan will be secured through a condition of the planning permission.
	Habitat manipulation prior to vegetation clearance to protect amphibians, reptiles and birds.	The approach to the manipulation of habitats prior to vegetation clearance to protect amphibians, reptiles and birds will be set out in the Habitat Management and Monitoring Plan. It is anticipated that implementation of the Habitat Management and Monitoring Plan will be secured through a condition of the planning permission.
	The clearance of all vegetation suitable for the use of nesting birds will be undertaken outside of the breeding season. Where this is not possible the area will be searched for active nests by an ecologist in advance of the works. Any active nests will be cordoned off and protected until the young have fledged.	The approach to vegetation clearance to protect nesting birds will be set out in the Habitat Management and Monitoring Plan. It is anticipated that implementation of the Habitat Management and Monitoring Plan will be secured through a condition of the planning permission.
	Trees subject to felling will be subject to a bat roost reassessment	The appropriate protection measures prior to tree felling are set out in the Tree Protection Scheme presented at Appendix ES4.3. It is anticipated that implementation of the Tree Protection Scheme will be secured through a condition of the planning permission.
	Erection of bat boxes on suitable trees	The proposals for the erection of bat boxes will be set out in the Habitat Management and Monitoring Plan. It is anticipated that implementation of the Habitat Management and Monitoring Plan will be secured through a condition of the planning permission.
	Temporary lighting will be managed as to avoid unnecessary light spill onto sensitive habitats in accordance with best practice, in particular the CWS/western interface with Bedford Purlieu and the brook/wet woodland corridor.	The lighting at the site will be used in accordance with the Lighting Scheme presented at Appendix ES4.2. It is anticipated that implementation of the lighting scheme will be secured through a condition of the planning permission.
	Control of dust emissions which may affect ecological receptors	The dust controls that are and will continue to be implemented at the sites are presented at Table ES14.3.
9. Cultural heritage	No mitigation is necessary	No mitigation related to the proposed development is necessary. Existing legal requirement and the actions necessary will be carried by Augean following discussions with the Conservation Officer.
10. Landscape and visibility	All soil placement operations will be carried out in accordance with the Institute of Quarrying Good Practice Guide for Handling Soils in Mineral Workings (2021).	The soil placement following restoration will be undertaken in accordance with the Soil Management Scheme presented at Appendix ES4.4. It is anticipated that implementation of the Soil Management Scheme will be secured through a condition of the planning permission.
	Reinstatement of the dry stone wall along Footpath Thornhaugh No 3 Sections 3 and 4	The dry stone wall which currently runs adjacent to Footpath Thornhaugh No 3 Sections 3 and 4 will be reinstated following restoration as shown on Figure ES4.3. The exact location will be agreed.

Environmental Statement section	Mitigation measures	Method of securing the mitigation
	The proposed restoration plan will result in significant biodiversity net gain which benefits landscape features and character	The Restoration Plan is presented at Figure ES4.3. Maintenance of the landscape planting will be set out in the proposed Habitat Management and Monitoring Plan. The Biodiversity Net Gain Plan is presented at Appendix ES6.1. The management and monitoring of the habitats will be included in the Habitat Management and Monitoring Plan. It is anticipated that implementation of the Restoration Plan and the Habitat Management and Monitoring Plan will be secured through conditions of the planning permission.
11. Flood risk assessment and surface water drainage	Operational and post restoration surface water management	The operational surface water management for Cooks Hole and the post restoration surface water management for the sites is set out in the Surface Water Management Scheme presented at Appendix ES4.1. The operational surface water management for Thornhaugh will continue to be undertaken in accordance with the Environmental Permit. It is anticipated that implementation of the Surface Water Management Scheme will be secured through a condition of the planning permission.
	Monitoring and maintenance scheme in respect of the detention basins, pipes, flow restriction devices and drainage channels is set out within the surface water management plan.	The monitoring and maintenance proposals are set out in the Surface Water Management Scheme presented at Appendix ES4.1. It is anticipated that implementation of the Surface Water Management Scheme will be secured through a condition of the planning permission.
12. Traffic and transport	No mitigation is necessary	
13. Noise	Noise limits for operations	The Noise Monitoring Scheme for the proposed development is presented at Appendix ES4.5. It is anticipated that noise limits for site operations and the implementation of the Noise Monitoring Scheme will be secured through conditions of the planning permission.
14. Amenity	Measures will be continued to be implemented to minimise the impacts of dust and mud on the road.	Control measures to minimise the generation of dust and mud on the road are presented at Table ES14.3. These control measures will continue to be implemented as standard practice for all site operations.
	Dust control measures	
	Lighting control measures	A Lighting Scheme for the proposed development is presented at Appendix ES14.2. It is anticipated that the implementation of the Lighting Scheme will be secured through conditions of the planning permission.

Table ES5.1

Status of the rights of way and permissive paths which currently cross Cooks Hole and Thornhaugh

Rights of Way (shown on Figure ES3.3)

Footpath reference	Current status	Start date of status Current end date of status	Changes as a result of the proposed development
FP Th No 3 Sect 3	Open	Not applicable	It will be necessary for the footpath to be temporarily diverted during the operations in the northern part of Cooks Hole. The footpath will be diverted along the permissive path to the south of Thornhaugh Brook. The footpath will be reinstated on its current route on completion of the operations at the sites.
FP Th No 3 Sect 4	Open	Not applicable	It will be necessary for the footpath to be temporarily diverted during the operations in the northern part of Cooks Hole. The footpath will be diverted along the permissive path to the south of Thornhaugh Brook. The footpath will be reinstated on its current route on completion of the operations at the site.
FP Th No 2	Diverted along the southern boundary of Thornhaugh on the route of FP Th No 3 Sect 4.	1995 Unknown	No change proposed. The original route will be reinstated on restoration of the site.
FP Th No 2 Sect 2	Stopped up.	12 January 2012 21 February 2042	No change proposed. The original route will be reinstated on restoration of the site.

Footpath reference	Current status	Start date of status Current end date of status	Changes as a result of the proposed development
FP Th No 4 Sect 1	Diverted. Currently diverted along the southern and eastern boundary of Cooks Hole as shown on Figure ES3.3.	November 2011 21 February 2042	No change proposed. The original route will be reinstated on restoration of the site.

Permissive paths (shown on Figure ES3.3)

Footpath reference	Current status	Current end date of status	Changes as a result of the proposed development
Permissive footpath on the restored part of Thornhaugh	Open	Not applicable.	No change. The permissive path will remain in place.

Table ES11.1

Capacities of the surface water detention basins as part of the proposed surface water management system at the site following restoration

Attenuation basin number	Catchment area (ha)	Storage capacity of basin (m ³)	Greenfield discharge rate (m ³ /day)	Maximum storage volume required (m ³)
1	19.938	8523	1543	6020
2	9.023	6256	698	2725
3	4.355	2576	337	1314.966
4	0.945	5040	73	285.226
5	5.558	2202	430	1678.015
6	3.473	1363	269	1048.672
7	6.973	2287	539	2105.741
Total	50.265	28248	3890	15177.555

Table ES13.1

Compliance noise monitoring results

Location No.	Description	dB LAeq,1h		Dominant noise source
		Measured	Criterion in the planning permissions	
1	Home Farm House	72	55	Regular vehicle movements along the A47.
2	Leedsgate Farm	56	50	Traffic movements on Kings Cliffe Road and Kings Cliffe industrial estate.
3	Nightingale Farm	57	50	Traffic movements on Kings Cliffe Road
4	Sibberton Lodge	69	51	Regular vehicle movements along the A47.
5	Oaks Wood Cottage	59	55	Regular vehicle movements along the A47.
6	Toll Cottage	55	55	Regular vehicle movements along the A47.

Table ES13.2

Assessment of noise associated with short term operations

Location	Predicted worst case site noise level dB LAeq,1h (free-field)	Criterion in the planning permissions dB LAeq,1h (free-field)
Home Farm House	54	70
Leedsgate Farm	43	70
Nightingale Farm	49	70
Sibberton Lodge	46	70
Oaks Wood Cottage	51	70
Toll Cottage	55	70

Table ES13.3

Assessment of noise associated with normal operations

		Criterion in the planning permissions dB LAeq,1h (free- field)	Predicted worst case site noise level dB LAeq,1h	Difference between site noise and noise limit
Home Farm House	Mon-Fri	55	49	-6
	Saturday	55	49	-6
Leedsgate Farm	Mon-Fri	50	39	-11
	Saturday	50	39	-11
Nightingale Farm	Mon-Fri	50	45	-5
	Saturday	46	45	-1
Sibberton Lodge	Mon-Fri	51	43	-8
	Saturday	51	43	-8
Oaks Wood Cottage	Mon-Fri	55	48	-7
	Saturday	55	48	-7
Toll Cottage	Mon-Fri	55	45	-10
	Saturday	55	45	-10

Table ES14.1

Summary of the dry hours wind data for 2000 to 2019 from the Wittering weather station located approximately 2.2km north north west of Cooks Hole and Thornhaugh

Mean wind speed (m/s)	True wind direction (% of the total dry hours)																All observations
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0																	0.975%
0.5 to 2	0.552%	0.381%	0.344%	0.324%	0.467%	0.527%	0.735%	0.701%	0.924%	0.533%	0.527%	0.470%	0.584%	0.382%	0.382%	0.335%	8.168%
2 to 3	1.045%	0.807%	0.677%	0.600%	0.631%	0.679%	0.796%	0.762%	1.190%	0.911%	0.800%	0.871%	1.283%	0.899%	0.755%	0.684%	13.391%
3 to 4	1.405%	1.035%	0.862%	0.759%	0.584%	0.488%	0.560%	0.602%	1.407%	1.202%	1.023%	1.365%	2.476%	1.170%	1.056%	0.902%	16.895%
4 to 5	1.223%	0.997%	0.831%	0.658%	0.434%	0.337%	0.368%	0.458%	1.300%	1.337%	1.134%	1.656%	2.497%	1.138%	1.077%	0.821%	16.264%
5 to 7	1.291%	1.276%	1.213%	0.767%	0.412%	0.359%	0.265%	0.602%	2.153%	2.470%	2.489%	3.398%	3.046%	1.745%	1.179%	0.919%	23.584%
7 to 9	0.321%	0.363%	0.549%	0.269%	0.117%	0.050%	0.048%	0.226%	1.066%	1.771%	1.839%	2.114%	1.673%	0.882%	0.350%	0.278%	11.915%
Equal to or greater than 9	0.063%	0.071%	0.182%	0.115%	0.017%	0.009%	0.002%	0.050%	0.566%	1.353%	1.402%	1.299%	1.274%	0.391%	0.083%	0.061%	6.939%
Missing/Incomplete																	1.868%
All observations	5.901%	4.930%	4.657%	3.491%	2.662%	2.448%	2.774%	3.401%	8.607%	9.577%	9.215%	11.172%	12.833%	6.607%	4.883%	4.000%	100.000%
% year wind between 0.5- 5m/s	4.22%	3.22%	2.71%	2.34%	2.12%	2.03%	2.46%	2.52%	4.82%	3.98%	3.48%	4.36%	6.84%	3.59%	3.27%	2.74%	54.72%
% year wind greater than 5m/s	1.68%	1.71%	1.94%	1.15%	0.55%	0.42%	0.32%	0.88%	3.79%	5.59%	5.73%	6.81%	5.99%	3.02%	1.61%	1.26%	42.44%

Notes: The true wind direction is the direction from which the wind is blowing
 The percentage of dry hours with calm wind is 0.98%
 There is missing data for 1.87% of the dry hours

Table ES14.2

Summary of potential dust disamenity effects at specific receptors within 400m of the application boundary without operational controls in place

The receptors are shown on Figure ES14.1. The worst case residual source emissions have been assessed for each location where a number of activities could take place at the same location. The residual source emissions have been determined and the assessment has been undertaken in accordance with the IAQM dust guidance (See Appendix ES14.1).

Receptor details and location		Approximate location relative to nearest dust source	Residual source emissions	Frequency of potentially dusty winds	Receptor distance from source	Pathway effectiveness	Dust impact risk	Magnitude of dust effect
HIGH SENSITIVITY RECEPTORS								
R1	Nightingale Farm	335m south of the planning application boundary	Large	Infrequent (1.68%)	Distant	Ineffective	Low risk	Slight adverse effect
R2	Toll Cottage	40m north west of the planning application boundary	Large	Infrequent (0.32%)	Close	Ineffective	Low risk	Slight adverse effect
R3	Home Farm House and five other properties	70m north of the planning application boundary	Large	Infrequent (3.79%)	Close	Ineffective	Low risk	Slight adverse effect
R4	Thornleigh House and Owl Corner	45m north of the planning application boundary	Large	Infrequent (3.79%)	Close	Ineffective	Low risk	Slight adverse effect
R5	The Cottages and surrounding properties	135m north of the application boundary	Large	Infrequent (3.79%)	Intermediate	Ineffective	Low risk	Slight adverse effect
R6	Oaks Wood Cottage	290m north of the planning application boundary	Large	Infrequent (3.79%)	Distant	Ineffective	Low risk	Slight adverse effect
MEDIUM SENSITIVITY RECEPTORS								
R7	Bedford Purlieus (SSSI and NNR)	Adjacent to the west of the planning application boundary	Large	Infrequent (0.55%)	Close	Ineffective	Low risk	Negligible effect
LOW SENSITIVITY RECEPTORS								
R8	Footpath Th No 2 Section 1	Adjacent to the south of the planning application boundary	Large	Infrequent (1.68%)	Close	Ineffective	Low risk	Negligible effect
R9	Footpath Th No 9 Section 1	Adjacent to the south west of the planning application boundary	Large	Infrequent (1.94%)	Close	Ineffective	Low risk	Negligible effect
R10	Footpath Th No 3 Section 2	Adjacent to the west of the planning application boundary	Large	Infrequent (0.55%)	Close	Ineffective	Low risk	Negligible effect
R11	Footpath Th No 2 Section 4	15m to the north of the planning application boundary	Large	Infrequent (3.79%)	Close	Ineffective	Low risk	Negligible effect
R12	Footpath Th No 10 Section 1	160m north of the planning application boundary	Large	Infrequent (3.79%)	Intermediate	Ineffective	Low risk	Negligible effect
R13	Footpath Th No 2 Section 3	15m to the north of the planning application boundary	Large	Infrequent (3.79%)	Close	Ineffective	Low risk	Negligible effect

Receptor details and location		Approximate location relative to nearest dust source	Residual source emissions	Frequency of potentially dusty winds	Receptor distance from source	Pathway effectiveness	Dust impact risk	Magnitude of dust effect
R14	Footpath Th No 4 Section 2	25m to the north of the planning application boundary	Large	Infrequent (3.79%)	Close	Ineffective	Low risk	Negligible effect
R15	Footpath Th No 4 Section 1	Adjacent to the south and south east of the planning application boundary	Large	Infrequent (1.68%) Infrequent (1.61%)	Close	Ineffective	Low risk	Negligible effect
R16	Footpath Th No 3 Section 3 This footpath will be diverted during the operations. The diverted route will follow footpaths already included in this table.	Crosses the centre of the sites in a generally west to east direction	Large	Moderately frequent (6.81%) The wind blowing from any direction could affect the footpath which crosses the site so the worst case has been assessed.	Close	Moderately effective	Medium risk	Negligible effect
R17	Footpath Th No 3 Section 4 This footpath will be diverted during the operations. The diverted route will follow footpaths already included in this table.	Crosses the centre of the sites in a generally west to east direction	Large	Moderately frequent (6.81%) The wind blowing from any direction could affect the footpath which crosses the site so the worst case has been assessed.	Close	Moderately effective	Medium risk	Negligible effect
R18	Old Oundle Road	Adjacent to the west of the application boundary	Large	Infrequent (0.55%)	Close	Ineffective	Low risk	Negligible effect
R19	Permissive footpath established on restoration of the area to the south of Thornhaugh Brook	Crosses the centre of the sites in a generally west to east direction	Large	Moderately frequent (6.81%) The wind blowing from any direction could affect the footpath which crosses the site so the worst case has been assessed.	Close	Moderately effective	Medium risk	Negligible effect

Table ES14.3

Dust control measures which will be implemented at Cooks Hole and Thornhaugh

Activity	Controls	Effectiveness of controls
Extraction of mineral and construction of landfill cells	<ul style="list-style-type: none"> • Spray the working area as necessary 	High
Mineral and waste processing	<ul style="list-style-type: none"> • The processes will incorporate dampening systems 	High
Movement of HGVs, plant and machinery	<ul style="list-style-type: none"> • Mobile plant will be regularly serviced. • The site haul road is hard-surfaced to the wheelwash area of the sites to reduce the mud and debris which may be carried by vehicles onto the local road network. • Other site haul roads are formed of compacted hardcore or similar material. • The movement of mobile plant and site traffic is restricted to defined haul roads. • Haul roads will be sprayed as necessary. • The hard-surfaced areas of the haul roads will be checked daily and cleaned as necessary. • The hard surfaced haul roads will be swept regularly to clear mud or debris. • The running surface of unsurfaced roads will be maintained to prevent the formation of ruts and potholes. • All vehicles leaving the site following delivery or the collection of materials are inspected visually by site operatives before leaving the site and are obliged to use the wheel wash. • Vehicle exhausts will point above the horizontal. Vehicle speed limits of 10mph will be enforced to minimise the potential for dust generation during vehicle movements. • Careful loading to minimise spillage and drop heights. 	High
Soil placement during restoration	<ul style="list-style-type: none"> • Soils must be handled when dry and friable therefore only limited use can be made of water sprays to dampen the material. • Minimise drop heights for tipping. • Movement of materials within the site will cease during high winds if it could generate dust emissions beyond the application site boundary. 	High

Activity	Controls	Effectiveness of controls
	<ul style="list-style-type: none">• Stockpiles which will be in place for a long period will be seeded where necessary to minimise wind blow as soon as conditions permit following formation.• Restored areas will be planted with vegetation as soon as possible after soil placement.	