Gravity

Smart Campus

Gravity LDO Environmental Statement

Volume 2 – Appendices

Appendix 5.2 Gravity EIA Scoping Report Part 1

Gravity Local Development Order

Environmental Statement - Scoping Report

On behalf of **This is Gravity** and **Somerset District Council**

Project Ref: 49102 | Rev: Final for Consultation | Date: June 2021

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Report Title: **Environmental Statement Scoping Report – Final for Consultation**

Date: **June 2021**

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Executive Summary

Background and Purpose

Sedgemoor District Council (SDC) proposes to make a Local Development Order (LDO) for a Site known as Gravity, to the east of Junction 23 of the M5, in Sedgemoor, Somerset (referred to hereafter as 'the Site') to grant a flexible planning permission for the Gravity Smart Campus and Community ("Proposed Development").

The LDO will facilitate the delivery of the Gravity Enterprise Zone: a smart campus and community. Part of the Site, formerly known as Huntspill Energy Park, received hybrid planning permission for an Energy Park in November 2017 (the '2017 Planning Consent'). Prior to determination of that application, the Site secured Enterprise Zone status in April 2017. Some elements of the 2017 Planning Consent, including the new road access onto the A39, and the Site remediation consent, have already been implemented.

The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) ("the EIA Regulations 2017") require that certain types of development undergo a process called Environmental Impact Assessment (EIA) as part of the decision-making process to ensure that likely significant effects on the environment are taken into account. The Proposed Development is an EIA development for which the EIA process shall be undertaken in accordance with the EIA Regulations. Particular provision for LDOs is made in Regulation 32. As part of the EIA process SDC must provide full information about the likely significant environmental effects of the Proposed Development in a document called an Environmental Statement (ES).

This ES Scoping Report has been prepared to enable SDC to consult the consultation bodies on the proposed scope, approach and level of detail of the information to be provided in the ES. The consultation bodies will include Natural England, the Environment Agency and any other body required to be consulted as part of the LDO process.

This report details how the environmental issues, which have been included in the ES scope, are proposed to be examined and progressed as part of the EIA. The purpose of the EIA process is to ensure that development consent for certain types of projects are not taken until an assessment of likely significant effects of the whole project has been undertaken on the basis of information provided by the developer in the ES, supplemented as appropriate by information from consultation bodies and the public. As part of the process consideration can be given to avoiding and minimising adverse environmental effects, where possible. For those topics that are proposed to be 'scoped out' as significant effects are not likely, this scoping report provides an evidence led approach for doing so. It also documents, where relevant, those supporting reports proposed to be provided with the LDO in relation to those 'scoped out' topics.

The Proposed Development

The Site comprises 261.54 hectares of land, of which approximately 250 hectares was part of the former Royal Ordnance Factory (ROF) that closed in 2008. The majority of the Site, associated with the ROF, is brownfield, previously developed land that has been incrementally developed over the past 70 years. The area of the Site associated with the ROF has been cleared and remediated under the separate planning permission for the remediation works approved by SDC on 3 April 2012. The Site also includes a new access road, part of the 2017 Planning Consent, which is due to be completed in late Summer 2021.

The description of development, as currently anticipated, is as follows:

a. any operations or engineering works necessary to enable the development of the Site, including demolition, excavation and earthworks, the formation of compounds for the stockpiling, sorting and treatment of excavated materials, import of material to create development platforms, piling, and any other operations or engineering necessary for

site mobilisation, office and worker accommodation, communications, drainage, utilities and associated environmental, construction and traffic management.

b. the development of a smart campus including

(i) commercial building or buildings with a total Gross External Area of up to 1,000,000m^2 which would sit within current Use Classes E (a)-(g), B2, B8 and sui generis floorspace uses and
(ii) a range of buildings up to 100,000m^2 within Use Classes C1, C2, E (a) – (g), F, B8, including restaurants / cafes, shops, leisure, education and sui generis uses and
(iii) up to 750 homes in Use Class C3

together with associated infrastructure including restoration of the railway line for passenger and freight services, rail infrastructure including terminals, sidings and operational infrastructure and change of use of land to operational rail land, multi-modal transport interchange, energy generation, energy distribution and management infrastructure, utilities and associated buildings and infrastructure, digital infrastructure, car parking, a site wide sustainable water management system and associated green infrastructure, access roads and landscaping.

The Proposed Development will be defined by reference to a series of parameter plans to provide the necessary flexibility in the development consented by the LDO whilst ensuring that the likely significant environmental effects of the resultant development will be no greater than those identified and assessed as part of this EIA process. These Parameter Plans are provided at **Appendix F**. Further information is provided in **Chapters 4 and 5.**

Scope of the ES

The ES will describe the Proposed Development and set out the policy context; give full detail of the EIA methodology and any technical methodologies and data used in support of the assessment; present the identification and assessment of likely significant environmental effects; detail any mitigation and measures that have been employed; and provide a schedule of proposed monitoring arrangements in respect of measures proposed to mitigate likely significant environmental effects.

The EIA Regulations require an outline of the likely evolution of the Site environment without implementation of the development as far as changes from the current state of the Site can be predicted. As a result, the assessment will be based around understanding the likely significant effects of the Proposed Development in 2032, when it is anticipated that the Proposed Development will be implemented, which will also coincide with the end of the Local Plan period.

The likely significant effects of the Proposed Development will therefore be compared to baseline conditions in 2032, which will include the implementation of the 2017 Planning Consent, the approved village enhancement scheme, foreseeable socio-economic trends and other existing and approved development in the surrounding areas, as well as likely changes to the natural environment between now and 2032

Based on the likelihood of significant environmental effects, it is proposed to include the following assessments in the ES:

- Economics
- Health, Social and Wellbeing
- Transport and Access
- Noise and Vibration
- Air Quality

- Biodiversity
- Water Environment
- Landscape and Visual
- Climate
- Cultural Heritage
- Impact Interactions

This report will be consulted upon by SDC to receive comments from consultees regarding the intended scope of the ES. Once this consultation is complete, the Scoping Report will be updated to address any comments and will be adopted by SDC as its Scoping Opinion.

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1 Introduction

1.1 Project Background

1.1.1 Sedgemoor District Council (SDC) proposes to make a Local Development Order (LDO) for a Site known as Gravity, to the east of Junction 23 of the M5, in Sedgemoor, Somerset (referred to hereafter as 'the Site') to grant a flexible planning permission capable of meeting market requirements for the Gravity Smart Campus and Community ("Proposed Development").

1.1.2 The Site Location Plan is provided in **Appendix A**. The Site is within ownership of This is Gravity Ltd and is within the administrative boundary of Sedgemoor District Council (SDC).

1.1.3 An LDO is intended to grant planning permission to specific types of development within a defined area. LDOs streamline the planning process by removing the need for developers to make a planning application to a local planning authority. They create certainty and save time and money for those involved in the planning process, whilst ensuring that public interests such as in efficient land-use and environmental protection are balanced. A simplified planning regime was a key part of the Memorandum of Understanding between the Government, the District and County Councils and the Local Enterprise Partnership, to facilitate inward investment and to enable local business rates retention from the Enterprise Zone. The LDO responds to that commitment.

1.1.4 Following submission of a report to SDC by This is Gravity Ltd setting out the case for progressing an LDO for the Site, SDC's Executive voted unanimously on 15th July 2020 to approve the preparation of an LDO for Gravity.

1.1.5 Given the scale of the Site, and the potential for significant adverse environmental effects, an Environmental Impact Assessment (EIA) process is required to be undertaken as part of the process of making the LDO.

1.1.6 Stantec has been appointed to manage the EIA process and the preparation of an Environmental Statement (ES), on behalf of SDC and This is Gravity Ltd, for the LDO. The ES will be prepared to provide full information on likely significant environmental effects and will be consulted on in parallel with consultation on the LDO, prior to adoption of the LDO.

1.1.7 A Design Guide is also being prepared. This will form part of the LDO and will identify design principles for a deliverable scheme that responds to the Site's technical and environmental constraints and opportunities.

1.2 Existing Planning Consent within the LDO Boundary

1.2.1 The Proposed Development will facilitate the delivery of the Gravity Enterprise Zone. Part of the Site, formerly known as Huntspill Energy Park, received hybrid planning permission for an Energy Park in November 2017 (the '2017 Planning Consent'). Prior to determination of that application, the Site secured Enterprise Zone status in April 2017. Some elements of the 2017 Planning Consent, including the new road access onto the A39 and the 2012 Site remediation consent, have already been implemented.

1.2.2 The site boundary for the 2017 Planning Consent, referred to as the 'Hybrid Planning Application Boundary' is shown on the plan in **Appendix B**. As a comparison, this plan also shows the LDO boundary, referred to on the plan as the 'Enterprise Zone Boundary'.

1.2.3 Background to the 2017 Planning Consent is provided in **Chapter 2**.

1.3 Purpose of this Report

1.3.1 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) ("the EIA Regulations 2017") require that certain types of development undergo a

process called Environmental Impact Assessment (EIA) as part of the decision-making process to ensure that likely significant effects on the environment are taken into account. The Proposed Development is an EIA development for which the EIA process shall be undertaken in accordance with the EIA Regulations. Particular provision for LDOs is made in Regulation 32. As part of the EIA process SDC must provide full information about the likely significant environmental effects of the Proposed Development in a document called an Environmental Statement (ES). In accordance with the EIA Regulations, a screening opinion was adopted by SDC on 23rd June 2021 (application no 99/21/00127).

1.3.2 This ES Scoping Report has been prepared to enable SDC to consult the consultation bodies on the proposed scope, approach, and level of detail of the information to be provided in the ES. The consultation bodies will include Natural England, the Environment Agency, Highways England, Somerset County Council, and any other body required to be consulted as part of the LDO process.

1.3.3 The environmental topics that are proposed to be included in the ES scope and those that are not (referred to as 'scoped out') are presented in **Chapters 7-16** and **Chapter 17,** respectively.

1.3.4 This report details how likely significant environmental effects are proposed to be identified and assessed in the ES. The purpose of the EIA process is to ensure that the LDO is not adopted until an assessment of likely significant effects of the whole project has been undertaken on the basis of information provided in the ES, supplemented as appropriate by information from consultation bodies and the public. Consideration will be given to mitigation measures through which likely significant environmental effects may be avoided or reduced and, where such measures are identified, to the appropriateness of monitoring measures. For those topics that are proposed to be 'scoped out' as significant effects are not likely, this scoping report identifies an evidence led-approach for so-doing. It also documents, where relevant, which supporting reports will be provided with the LDO in relation to those 'scoped out' topics.

1.3.5 This report provides information to consultation bodies regarding the proposal pursuant to the 'EIA Regulations' and sets out the intended scope of the EIA and content of the ES. Once this consultation is complete, the Scoping Report will be updated to address comments and will be adopted by SDC as the Scoping Opinion for the ES for the Gravity LDO.

1.4 Environmental Impact Assessment Team

1.4.1 The EIA work will be undertaken by the following organisations. A table outlining their relevant expertise is provided in **Table 5.1.**

- Ashfield Solutions – Ground Conditions;
- Ecology Solutions – Biodiversity;
- Stantec – EIA Coordination and ES Preparation; Economics; Health, Social and Wellbeing; Transport and Access; Noise and Vibration; Air Quality; Water Environment; Climate Change; Lighting; Waste; Sustainability and Energy; Utilities;
- The Richards Partnership – Landscape and Visual; and Arboriculture; and
- Wessex Archaeology – Cultural Heritage.

1.5 Report Structure

1.5.1 This report continues with the following:

- Chapter 2: Site History and Planning Policy;

- Chapter 3: Site Description;
- Chapter 4: Proposed Development;
- Chapter 5: EIA Process;
- Chapter 6: Proposed Scope of the ES;
- Chapters 7 to 16: Topics included in the ES Scope;
- Chapter 17: Topics not included in the ES Scope;
- Chapter 18: Summary and Next Steps

2 Site History and Policy

2.1 Introduction and Background

2.1.1 The Gravity Site has a long contextual history. The Site was shut by BAE Systems in 2008, following sole occupation and operation as a manufacturing facility of national importance. SDC took the opportunity to ensure that the Site would deliver maximum benefit on its redevelopment, in accordance with an economic development led strategy to transform the local economy. This was necessary due to a number of industrial closures at the time, resulting in significant employment loss. Economic evaluation at the time, and indeed since, has illustrated the low value – low wage nature of the Sedgemoor economy and the employment reliance on sectors which are at risk in the future from decline and employment loss due to economic restructuring as well as advances in automation and robotics. It is therefore vital to consider the site as part of a wider local, regional and national policy and delivery context.

2.1.2 From a locality perspective it is important to note Sedgemoor District Council's corporate priority for inward investment and growth, as well as the drive for transformation through the Council economic development strategy, most recently refreshed in September 2020.

2.1.3 The Council's Corporate Strategy 2020 – 2021 identifies Growth & Infrastructure as one of the three priority themes to deliver all their corporate objectives. In particular, the priority to grow the economy of Sedgemoor will be achieved by ensuring supply of employment land, encouraging businesses to locate to Sedgemoor and working to increase the skill level of the workforce. Gravity will support the delivery of all of these objectives. Similarly, objectives such as working toward carbon neutrality by 2030, delivering the housing programme, creating additional leisure opportunities and creating a clean and healthy environment to promote wellbeing are also all aligned with Gravity's own vision and objectives.

2.1.4 The Council's Economic Development Strategy 2020 – 2050 explains that by 2050 Sedgemoor will be a clean growth and energy link on the M5 "Innovation Highway" which connects an environmental, health and marine digital hub to the south and a high-tech transport, cybersecurity, health, and data-driven hub to the north. The Economic Development Strategy identifies the prominence of Gravity as the key project within the District and states that it offers further long-term opportunity for the transformation of Sedgemoor's economy. The Strategy confirms Gravity's vision is wholly aligned with the UK and local industrial strategies, in aiming to drive productivity through the delivery of an internationally leading innovation campus that is underpinned by clean growth. The Strategy confirms that Gravity will support high-value business across: low carbon energy generation; manufacturing; electric vehicles; robotics; artificial intelligence, data analytics, R&D and the creative industries. Importantly the Strategy also notes that Gravity will not only create an inclusive environment, with leisure facilities and amenities accessible to both employees and the wider local community, but its development will ensure design and economic activity that does not compromise the quality of the natural environment.

2.1.5 Somerset's Climate Emergency Strategy, developed jointly by the five Somerset local authorities, sector experts and external partners, was formally adopted by all five Somerset Councils in November 2020. The aim of the strategy is to reduce carbon emissions in the county and make Somerset a county resilient to the inevitable effects of Climate Change. The strategy sets ambitious goals for Somerset to become a carbon neutral county by 2030 and also outlines what the five councils intend to do to address the most important issues around the Climate Emergency. The declarations made within the Climate Emergency Strategy include achieving carbon neutrality by 2030 and building resilience for, or adapting to, the impacts of a changing climate. The Strategy describes many objectives which are aligned with Gravity and describes a number of benefits linked to delivering development in this way across economic, social and environmental areas,

2.1.6 From a wider perspective, the temporary nature and impact of nationally significant infrastructure projects, including Hinkley Point C and its Connection Project, in creating

investment and confidence in the locality, and drawing in labour from the wider region, is relevant to the ambition and transformational nature of the Gravity site in securing long term and positive change to sustain employment into the future. Whilst NSIPs are linked to the local plan through the need for mitigation, these projects effectively sit within a parallel planning regime. Nonetheless, their presence and impacts on the locality and its economy is a key factor to consider in the economic assessment to ensure legacy and continuing benefit as well as labour force transition.

2.1.7 This section sets out the various local policy documents which consider and have influenced the planning process for the Site and the summarises the planning history of the Site.

2.2 Policy Hierarchy

2.2.1 The Sedgemoor Development Plan is made up of the Sedgemoor Local Plan 2011-2032 and a suite of Supplementary Planning Documents (SPDs) and other adopted strategies and guidance. The Sedgemoor Local Plan sets out the policy framework for future development in the District, including provision of housing, employment, retail and other facilities and infrastructure. It was adopted in February 2019. It therefore forms part of the development plan for the District and is a main consideration in the determination of planning applications.

2.2.2 The Local Plan relates to the whole District and provides a strategy for delivering growth up to 2032. Below the Local Plan sit a number of adopted SPDs, including an SPD relating to the Site itself, strategies (including the Sedgemoor Transport Investment Strategy 2050, for example) and guidance. The National Planning Policy Framework (the Framework) is also a key material consideration in decision making in Sedgemoor. Specific to the topic of waste is the Somerset Waste Core Strategy, which covers the entire county. The Local Plan and pertinent associated considerations for the Gravity LDO, starting with the national context and the Framework, are set out below.

2.3 Planning for the Future White Paper

2.3.1 The Planning for the Future White Paper, published in August 2020, described the challenge we face as an inefficient, opaque process and poor outcomes. The Paper describes that the planning system is central to our most important national challenges: tackling head on the shortage of beautiful, high quality homes and places where people want to live and work; combating climate change; improving biodiversity; supporting sustainable growth in all parts of the country and rebalancing our economy; delivering opportunities for the construction sector, upon which millions of livelihoods depend; the ability of more people to own assets and have a stake in our society; and our capacity to house the homeless and provide security and dignity.

2.3.2 However, the Paper describes that it is too complex given the planning system we have today was shaped by the Town and Country Planning Act 1947, which established planning as nationalised and discretionary in character. Since then, decades of reform have built complexity, uncertainty and delay into the system. It also notes that planning decisions are discretionary rather than rules-based with nearly all decisions to grant consent undertaken on a case-by-case basis, rather than determined by clear rules for what can and cannot be done. This makes the English planning system and those derived from it an exception internationally, and it has the important consequences of increasing planning risk, pushing up the cost of capital for development and discouraging both innovation and the bringing forward of land for development.

2.3.3 The Paper notes that planning system needs to be better at unlocking growth and opportunity in all parts of the country, at encouraging beautiful new places, at supporting the careful stewardship and rebirth of town and city centres, and at supporting the revitalisation of existing buildings as well as supporting new development. Part of the response to these challenges is to consolidate other existing routes to permission including simplified planning zones and enterprise zones to ensure efficiency in the delivery of important development, such as Gravity.

2.4 National Planning Policy Framework

2.4.1 At a National Level planning policy is set out within the National Planning Policy Framework (the Framework). The Framework explains that the purpose of the planning system is to contribute to the achievement of sustainable development. At a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs. The Framework continues to explain that in order to achieve this aim the planning system has three overarching objectives; an economic objective; a social objective and; an environmental objective. The framework must be read as a whole including footnotes and it is very clear that the UK Government Industrial Strategy forms a key part of it.

2.4.2 The Framework states that significant weight should be placed on the need to support economic growth and productivity, taking into account both local business needs and wider opportunities for development. The approach taken should allow each area to build on its strengths, counter any weaknesses and address the challenges of the future. This is particularly important where Britain can be a global leader in driving innovation, namely in the Grand Challenge areas set out within the Industrial Strategy (including artificial intelligence and big data; clean growth; future mobility), and in areas with high levels of productivity, which should be able to capitalise on their performance and potential. Planning policies should:

> a) set out a clear economic vision and strategy which positively and proactively encourages sustainable economic growth, having regard to Local Industrial Strategies and other local policies for economic development and regeneration;
>
> b) set criteria, or identify strategic sites, for local and inward investment to match the strategy and to meet anticipated needs over the plan period;
>
> c) seek to address potential barriers to investment, such as inadequate infrastructure, services or housing, or a poor environment; and
>
> d) be flexible enough to accommodate needs not anticipated in the plan, allow for new and flexible working practices (such as live-work accommodation), and to enable a rapid response to changes in economic circumstances.

2.4.3 The Framework also states that planning policies and decisions should recognise and address the specific locational requirements of different sectors. This includes making provision for clusters or networks of knowledge and data-driven, creative, or high technology industries, and for storage and distribution operations at a variety of scales and in suitably accessible locations.

2.4.4 It explains that these objectives should be delivered through the preparation and implementation of plans and the application of the policies in the Framework and that planning policies and decisions should play an active role in guiding development towards sustainable solutions. The Framework contains a presumption in favour of sustainable development which should be applied to both plans and planning decisions.

2.4.5 Under the heading of ‘tailoring planning controls to local circumstances’, the Framework explains that local planning authorities are encouraged to use Local Development Orders to set the planning framework for particular areas or categories of development where the impacts would be acceptable, and in particular where this would promote economic, social or environmental gains for the area.

2.4.6 In the context of building a strong and competitive economy the Framework states that planning policies and decisions should help create the conditions in which businesses can invest, expand, and adapt. The Framework explains that planning decisions should recognise that Sites to meet local business and community needs in rural areas may have to be found adjacent to or beyond existing settlements, and in locations that are not well served by public transport. In these circumstances it will be important to ensure that development is sensitive to its surroundings, does not have an unacceptable impact on local roads and exploits any

opportunities to make a location more sustainable (for example by improving the scope for access on foot, by cycling or by public transport). Of particular relevance here, the use of previously developed land should be encouraged where suitable opportunities exist.

2.4.7 Importantly in the context of Gravity, significant weight should also be placed on the need to support economic growth and productivity, taking into account both local business needs and wider opportunities for development. The approach taken should allow each area to build on its strengths, counter any weaknesses and address the challenges of the future. This is described as being particularly important where Britain can be a global leader in driving innovation.

2.5 Bridgwater Vision

2.5.1 In 2009 SDC, working alongside a range of partners, published the first iteration of the Bridgwater Vision. The aim of the Bridgwater Vision was to develop a 'spatial' vision for Bridgwater in order to bring about transformation and help to create distinctiveness with a re-vitalised image and economic base, effectively repositioning the town over the subsequent 50-year period to 2060. The Vision for Bridgwater set out in the Bridgwater Vision explains that, *'In 2060 Bridgwater will be an energy conscious town known for its ambitious approach to sustainability and low carbon living. Bridgwater will be seen as a place that has been re-energised into a confident town…'.*

2.5.2 This first iteration of the Bridgwater Vision describes the Gravity Site as one of the keys characters areas to deliver that Vision. It explains that the Gravity Site will be a significant employment area linked to a renewable, low carbon energy source. It continues to describe that the employment area would benefit from on-Site rail links, a bespoke travel plan service for workers from Bridgwater town centre and the promotion of cycle tracks and footpaths through the Site providing links to Puriton, Woolavington and Bridgwater, encouraging greater use of non-vehicular transport modes.

2.5.3 The Bridgwater Vision also explains that opportunities to incorporate other uses on the Site would also be explored including leisure uses, key worker / specialist / market housing and areas of open space for recreation. Under a specific section of the report on housing on the Gravity Site the Bridgwater Vision states that housing development in this area would be dependent on the long-term future of the Site and that potentially new housing development could be linked to key worker accommodation, linked to specific employment opportunities on the Site.

2.5.4 In 2015 the Bridgwater Vision was refreshed to provide an update on the successes delivered over the intervening 6-year period. The story was positive with many success and progress made toward delivering a number of the identified objectives and outcomes. Gravity continued to be identified as a priority, maintaining detail on SDC's ambitions for the Site, although it did state that at that point there was significant uncertainty about the future of this Site. The concept of Huntspill Energy Park was described, and the Vision anticipated it could be a significant employment development for B1 (business) and B2 (general industrial) energy related uses for the town linked to a renewable low carbon energy source. The refreshed Vision explained that the then owner, BAE Systems, was considering initial ideas for potential energy uses, but that the Site could also provide a unique opportunity to the support services and industries related to a new generation of nuclear investment, possibly to accommodate foreign direct investment to supply components. Again, housing on the Site, or in its wider locale, was also considered dependent on the long-term future of the Site.

2.5.5 Both iterations of the Bridgwater Vision were adopted as a material consideration in the planning process and the transformational / priority schemes identified within it are directly referenced in the Local Plan.

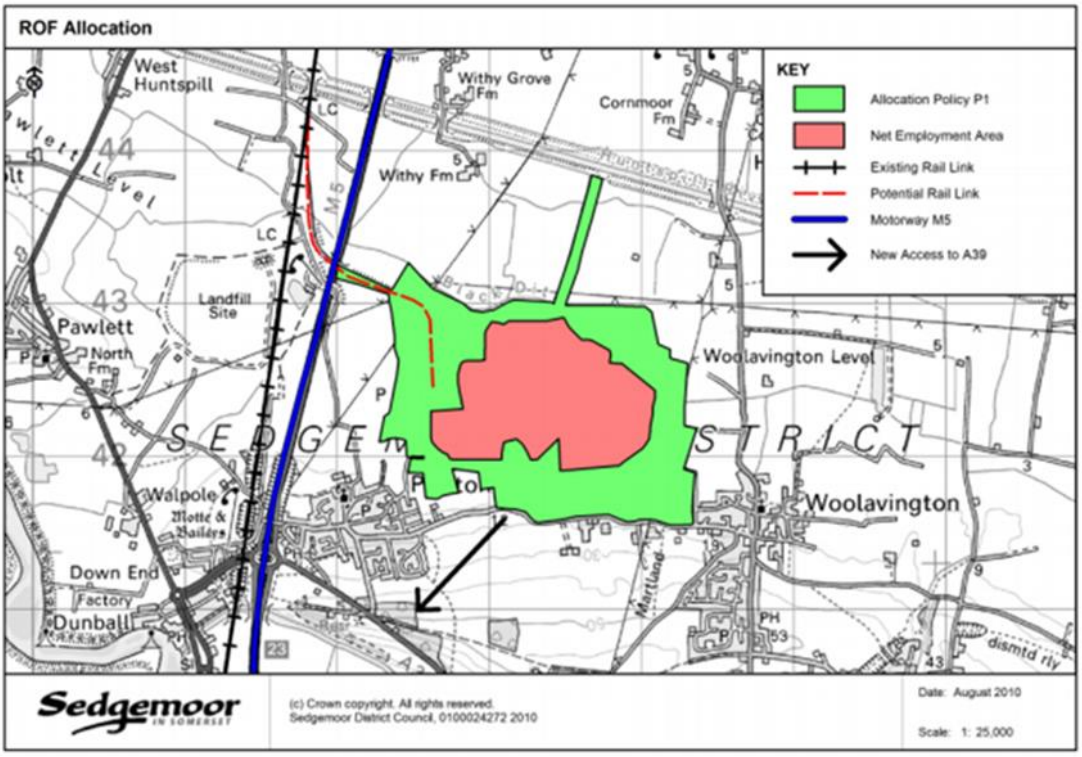
2.6 Core Strategy

2.6.1 The Sedgemoor Core Strategy was adopted in September 2011 and, although now superseded by the new Local Plan, included an allocation for an 'Energy Park' on the Gravity site (Policy P1 Bridgwater), with priority given to industrial uses including renewable or low carbon energy generation and other energy-related or complementary uses, including green technologies, supply components and support services. This allocation was based upon assumptions made at the time regarding the opportunity the Site presented, without any market interface, and identified approximately 90 hectares of developable employment land for a range and mix of employment uses. **Figure 2.1** below is the allocation as identified within Sedgemoor Core Strategy. At this time, SDC's application for EZ status had not been made.

Figure 2.1: Site allocation plan included within SDC Core Strategy 2011

ROF Allocation Policy P1

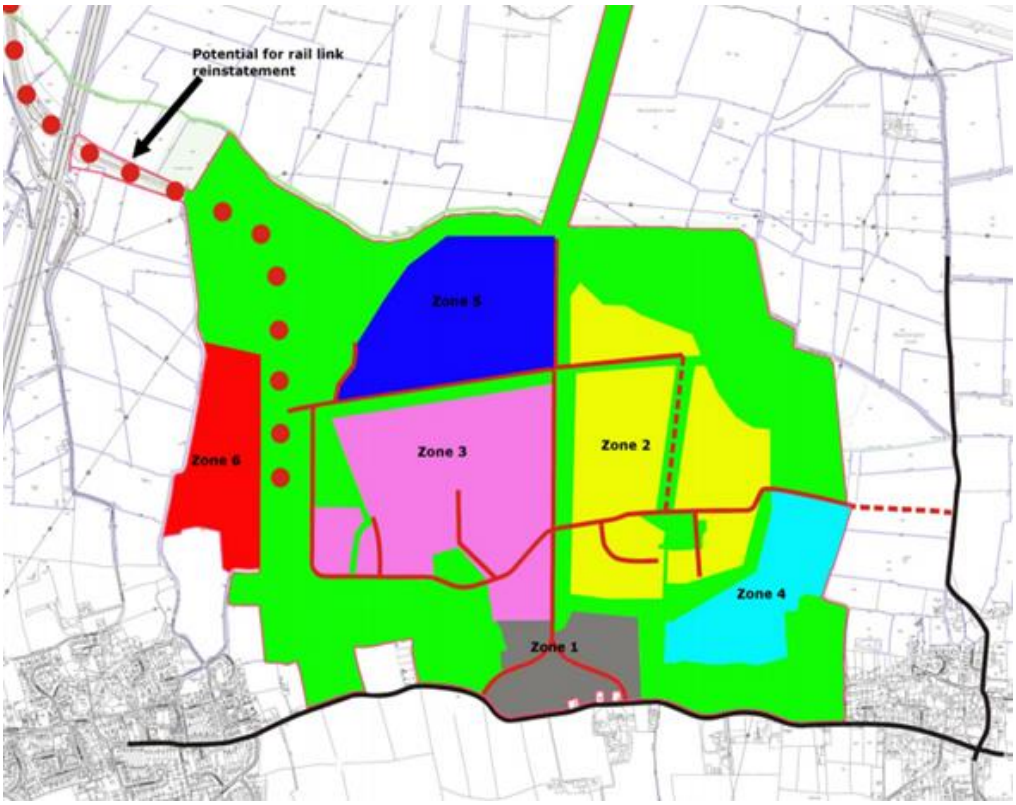
Map 13.2 ROF Allocation



2.7 Puriton Energy Park SPD

2.7.1 In order to elaborate and provide greater detail on policies within the Core Strategy relating to the 'Energy Park', SDC adopted the Puriton Energy Park SPD in March 2012. The SPD explains that the Site covers an area of 171 hectares within the enclosed security fence and that BAE Systems owned another 104 hectares of farmland surrounding the Site, outside the security fence. Therefore, the whole area the SPD covers is 275 hectares, which includes the now constructed solar farm to the west of the Site. This solar farm is no longer connected to Gravity. **Figure 2.2** below is an extract from the SPD and indicates the proposed developable areas and potential uses within each of those zones, as set out within the SPD.

Figure 2.2: Developable areas and use zones set out within the SPD.



Zones and Uses Key

- Zone 1 (Grey) – Commercial, community and recreational uses
- Zone 2 (Yellow) – Manufacturing, research and development
- Zone 3 (Pink) – Manufacturing, research and development, energy storage and logistics
- Zone 4 (Light Blue) – Green buffer
- Zone 5 (Dark Blue) – Major energy production
- Zone 6 (Red) – Solar Power Generation

2.7.2 The SPD provided a framework for assessing planning applications for the Site and focused on the main development objectives required to deliver the Energy Park. The SPD was informed by technical studies to gain an understanding of Site constraints and opportunities. The SPD is clear to stress that it does not set out full details of how the Site will be redeveloped, for example detailed building plans, road layouts and known end users. Instead, it sets out high level parameters against which detailed schemes submitted to SDC will be assessed. The SPD is therefore described as high-level planning tool that sets out the important requirements and considerations that should be borne in mind when preparing planning applications. Importantly, the SPD clearly states that it does not set out what the Site will ultimately look like or who will occupy it, which it states is the role of subsequent planning applications. Since 2012, much has changed in terms of the national policy and political context, with a new Framework, a stronger focus on EZ delivery, Industrial Strategy and Clean Growth, The SPD is therefore somewhat outdated in places, however, does provide some valuable input in terms of design principles.

2.8 Topic Specific Policies

2.8.1 The following policies within the Sedgemoor Local Plan 2011-2032 are relevant to each of the topics covered in this scoping report.

Topics currently proposed to be scoped into EIA

Topic	Relevant Local Plan Policies
Economics	B1 – Bridgwater Vision Transformational Projects B7 Employment D15 Economic Prosperity D16 Safeguarding Existing Employment Land and Buildings ***Other relevant strategies/considerations:*** Sedgemoor Economic Development Strategy 2050 Bridgwater Vision
Health, Social, Wellbeing and Inclusion	B1 Bridgwater Vision Transformational Projects B14 Education B17 Servicing Facilities D2 Promoting High Quality and Inclusive Design D5 Housing Mix D6 Affordable Housing D7 Care Homes and Specialist Accommodation D25 Protecting Residential Development D27 Education Provision D28 Health and Social Care D34 Outdoor Public Recreational Space and New Residential Areas
Transport and Access	S3 Infrastructure Delivery S4 Sustainable Development Principles B16 Transport D13 Sustainable Transport and Movement D14 Managing the Transport Impacts of Movement ***Other relevant strategies/considerations:*** Sedgemoor Transport Investment Strategy 2050
Noise and Vibration	D24 Pollution Impacts of Development D25 Protecting Residential Amenity
Air Quality	S4 Sustainable Development Principles

	D24 Pollution Impacts of Development
Biodiversity	D20 Biodiversity and Geodiversity D21 Ecological Networks D23 Bat Consultation Zones D29 Protection and Enhancement of Existing Green Infrastructure Resources
Water Environment	S5 Mitigating the Causes and Adapting to the Effects of Climate Change B15 Flood Defence D1 Flood Risk and Surface Water Management
Landscape and Visual	D19 Landscape D22 Trees and Woodland D29 Protection and Enhancement of Existing Green Infrastructure Resources D30 Green Infrastructure Requirements in New Development
Climate Change	S4 Sustainable Development Principles S5 Mitigating the Causes and Adapting to the Effects of Climate Change
Archaeology and Cultural Heritage	D26 Historic Environment
Topics currently proposed to be scoped out of EIA	
Ground Conditions and Contamination	D24 Pollution Impacts of Development
Lighting	D24 Pollution Impacts of Development D25 Protecting Residential Amenity
Arboriculture	D22 Trees and Woodland D29 Protection and Enhancement of Existing Green Infrastructure Resources D30 Green Infrastructure Requirements in New Developments
Waste	Somerset Waste Core Strategy
Sustainability and Energy	S4 Sustainable Development Principles S5 Mitigating the Causes and Adapting to the Effects of Climate Change

2.9 Site History

2.9.1 The majority of the Gravity Site, formerly known as Huntspill Energy Park (HEP), received planning permission for an Energy Park in November 2017 (the '2017 Planning Consent').

2.9.2 Approximately 250 hectares of the HEP site was part of the former Royal Ordnance Factory (ROF) owned by BAE Systems. The ROF site was closed by BAE Systems in 2008. The Site was acquired by This is Gravity in 2017. Since 2017 Gravity have focused on remediation and link road construction. More recently the technical work has evolved to translate a new ambition to achieve a smart campus into Gravity policy documents to shape and drive technical processes. The Clean and Inclusive Growth Strategy establishes priority themes informed by an evaluation of the UN Sustainable Development Goals and the Environmental and Social Governance Policy establishes a commitment to reporting on progress and outcomes. The Digital Vision underpins the smart campus proposition, enabling new technology, infrastructure, solutions, inclusion, and ensuring greater inclusion and outcomes through the smart campus and community.

2.9.3 Prior to determination of the Huntspill Energy Park application (The 2013 HEP Application) the Site secured Enterprise Zone (EZ) status in April 2017. The EZ became live on the 1 April 2017 and runs for 25 years until 2042.

2.9.4 The development covered by the 2013 HEP Application was defined by a Parameters Plan, which is provided at **Appendix C**. This identified the scale, location and uses for those parts of the Site for which planning permission was sought as well as identifying areas safeguarded for energy generating uses, rail connection and leisure uses (which would be the subject of separate planning applications). A note setting out the Parameters established by the 2017 Planning Consent and Environmental Statement is provided at **Appendix D.**

2.9.5 An ES was prepared for the 2013 HEP Application as follows:

- An Environmental Statement was submitted with the 2013 HEP Application in April 2013 (the '2013 ES');
- An Environmental Statement Update was submitted in October 2013 (the '2013 ES Update'); and
- An Environmental Statement Addendum was submitted in June 2017 (the '2017 ES Addendum').

2.9.6 The ES formed part of the wider EIA process which considered the likely significant effects of firstly, the development to be permitted by the grant of planning permission and secondly, the safeguarded areas included as part of the planning application. A realistic scenario was identified for the energy generating uses included in the safeguarded areas to allow the EIA process to assess the likely significant effects of these uses with the development which was permitted by the 2017 Planning Consent at the Site.

2.9.7 Demolition of existing structures and remediation works for the Former ROF site were subject to a separate planning application which was approved by SDC on 3 April 2012 (42/11/00017). These works were also considered in the EIA prepared for the 2013 HEP Application as they were considered integral to the overall project.

2.9.8 A few buildings, including some buildings currently being used as site offices by Gravity, are still located on the Site. These will be demolished under the LDO.

2.9.9 The majority of demolition and remediation works were completed in November 2020 (see **Section 17.2** for more details on site remediation).

2.9.10 Several elements of the 2017 Planning Consent have also been implemented as follows:

- The new road access onto the A39. Construction of the road is ongoing and is scheduled to open in April 2021. Therefore, the completed road including the landscape bund will form part of the baseline for the EIA for the LDO.

- The Village Enhancement Scheme, an obligation within the s106 agreement, has achieved planning consent and is passing through the technical approval process with Somerset County Council in order to be delivered in accordance with the obligation.

- Another obligation requiring the agreement of a Framework Local Labour Agreement (FLLA) has also been discharged with the FLLA being agreed and signed by This is Gravity Ltd and Sedgemoor District Council in December 2020.

- Ecological works required as part of the demolition and remediation works have been undertaken, including the newt ponds constructed in the north-west corner of the Site; clearance of the majority of trees and vegetation from the development area; great crested newt fencing and badger mitigation. These elements are therefore included in the ecology baseline for the EIA for the LDO. The ecology baseline is set out in detail in **Chapter 12 Biodiversity.**

- A number of pre-commencement planning conditions have also been discharged. These include those which relate to the delivery of the access road but also site wide conditions. To date the following site-wide conditions have been discharged:

    - Condition 12 - Remediation Works

  Condition 24 – Ecological Management Plan Framework

    - Condition 29 – Strategic Design Code

- Condition 34 - Ecological Mitigation and Enhancement Strategy

    - Condition 36 – Strategic Landscape Masterplan

    -

  Whilst the following site- wide planning conditions are under consideration for discharge by SDC:

    - Condition 23 Operation & Maintenance Manual for Surface Water Drainage Infrastructure

    - Condition 30 - Assessment of Existing Surface Water and Effluent Disposal Infrastructure

    - Condition 31 – Strategic Surface Water Management Plan

    - Condition 33 – Ecological Reed Bed Assessment

  There are also a further two site-wide conditions that are intended to be discharged in 2021.

3 Site Description

3.1 Site Location

3.1.1 The Site is located between the villages of Puriton and Woolavington, approximately 6km north east of Bridgwater. The Site lies 2km to the east of Junction 23 of the M5 motorway.

3.1.2 A Site Location Plan is included in **Appendix A**.

3.2 Site Description

3.2.1 The Site comprises 261.54 hectares of land, of which approximately 250 hectares was part of the former Royal Ordnance Factory (ROF) which closed in 2008. The majority of the Site, associated with the ROF, is brownfield, previously developed land which has been incrementally developed over the past 70 years. Land on the edges of the Site, in particular to the south and east, is currently greenfield agricultural land.

3.2.2 An annotated site plan showing some of the Site features described in this section is provided at **Appendix E.**

3.2.3 The area of the Site relating to the former ROF has been remediated to ensure that any residual contamination does not pose an unacceptable risk to the health of future occupants or the environment. As stated in **Chapter 2**, the remediation has been undertaken through implementation of the remediation planning consent and therefore the site is now remediated and levelled.

3.2.4 The Site is low lying and flat with levels across the Site varying between 4.5 to 7.3 metres above ordnance datum (AOD).

3.2.5 The local area is known as Puriton Level and is crossed by rhynes (drainage ditches). These provide the existing surface water drainage on Site, eventually discharging into the Huntspill River to the north. Some of these rhynes pass through the Site, conveying flows from the upstream catchment, whilst the rhynes and ditches on Site discharge into these.

3.2.6 Linking the Site and the Huntspill River to the north is a system of reed beds which historically provided treatment for the process effluent from the former Royal Ordnance Factory. However, following the remediation of the Site, effluent is no longer discharged into the on Site rhynes and ditches or reed beds. At its most northern point, a small, confined area of the Huntspill River National Nature Reserve (NNR) lies within the Site boundary.

3.2.7 Broadly, the Site comprises grasslands, woodland, scrub, hedgerows, tall ruderal, and ephemeral vegetation along with standing water, reed bed, wet and dry ditches as well as buildings and hardstanding. There are also areas of disturbed / bare ground. The Site includes a reedbed system that connects the Site to the River Huntspill to the north.

3.2.8 There are eight Local Wildlife Sites (LWS) located, or partially located, within the Site boundary: Puriton Rhynes and Ponds; Borrow Pit, Puriton; Puriton Cowslip Field; Puriton Ash Ground; North Mead Drive Fields; Puriton Meadows and Rail Spur; Stoning Pound Field South and Stoning Pond Rhyne; and Woolavington Road and Fields North.

3.2.9 Newt ponds, constructed as mitigation for the site remediation works, are located in the north-west corner of the Site. Other ecological mitigation works on site include great crested newt fencing and badger mitigation.

3.2.10 Fishing ponds are located in the east of the Site, within the Puriton Rhynes and Ponds LWS and these form part of the Gravity ownership, but do not fall within the Enterprise Zone designation.

3.2.11 In the south of the Site, in the area where the Link Road joins the former ROF Site, balancing ponds have been installed for the road.

3.2.12 The south east of the Site and along the southern boundary outside the ROF Site, contains a mix of scrub, hedgerows, tall ruderal and semi-improved grassland associated with the agricultural land use and relatively small fields separated by hedgerows. This area includes a remnant orchard in the south-east corner.

3.2.13 In the north-west corner of the Site, associated with the Puriton Meadows & Rail Spur LWS, are located trees and shrubs and four ponds which contain Great Crested Newts.

3.2.14 There are some areas of agricultural land that are within the Site boundary, in the north west and western parts of the Site, and along the southern boundary. Review of Natural England's Agricultural Land Classification Map South West Region identifies that this land is likely to be of Good to Moderate (Grade 3) agricultural value.

3.2.15 The Site is well served by utilities (gas, electricity, and water) and on the west edge also benefits from a link into the rail network, reinstatement of which is an integral part of the LDO for This is Gravity and that the rail link will be reopened for both passengers and freight, as specified within the Parameters Plans.

3.2.16 There are National Grid overhead lines crossing the Site. Existing 133kv Pylons cross the Site in the south-east corner and also cross the Site in the north-west corner. It should also be noted that whilst consented but not yet installed, Hinkley Point C Connection 'T' pylons will pass along and within the eastern boundary of the Site, replacing the existing pylons in the south-east corner of the site. The current programme of works sees these T pylons and overhead lines completed in Mid-2024.

3.2.17 A small substation, the Black ditch 33kV Switch Station, is located in the north west of the Site, under the existing overhead line.

3.2.18 The Site includes four spurs from the main relatively square central Site area:

- To the north-west: which comprises the route of the former railway spur, crossing the M5 motorway, to join the Bristol-Exeter mainline railway;
- To the north, a spur runs from the central Site area to the Huntspill River and contains a large system of reed beds;
- To the east, the Site is linked to the B3141 Causeway by a narrow strip of land which is the current access track to the fishing lakes; and
- To the south, a large spur which is the route of the new access road linking the Site from its south west end to the A39 via a route running to the east and south of the village of Puriton and linking in to the A39 immediately south of Puriton. This new access road is currently under construction and nearing completion.

3.2.19 In terms of access, the Site benefits from the new access road to the A39 and the link to the B3141 Causeway as explained above. There is also an established access onto Woolavington Road in the form of a Y–shaped priority junction where the western and eastern approach roads link to form a single point of entry to the Site. Access by rail (currently disused) is gained by the spur to the west.

3.2.20 The new access road also includes a landscape bund which has been included to provide some screening of the road to nearby residential properties.

3.3 Environmental Context

3.3.1 The village of Puriton lies immediately to the south west of the Site and the village of Woolavington lies immediately to the south east. Beyond Puriton, approximately 2km west of the Site, lies junction 23 of the M5 motorway and the motorway runs in north-south orientation.

3.3.2 As well as the M5 motorway, the closest roads are Woolavington Road which runs in an east-west direction between the villages of Woolavington and Puriton to the south of the Site, the B3141 Causeway which runs in a north south direction between the villages of East Huntspill and Woolavington to the east of the Site.

3.3.3 The Site lies within central Somerset, a low-lying area criss-crossed by a network of drainage ditches/rhynes, running south from the Mendips to the Blackdown Hills.

3.3.4 The Huntspill River lies immediately to the north of the Site. It is essentially a large reservoir constructed to provide a water supply to the former ROF. As such, water levels are managed to be 3.5mAOD in the summer and 2.9mAOD in the winter.

3.3.5 Within 5km of the Site there are a number of internationally and nationally designated nature conservation Sites. These are:

- Huntspill River National Nature Reserve (NNR) - located immediately to the north of the Site, with a small section (c.0.7ha) overlapping with the red line. This NNR consists of open water, lowland grassland, and small areas of woodland. It supports populations of Otter and Barn Owl. It is also designated due to its supporting and connecting habitat between the Severn Estuary Special Protection Area (SPA) located 2 km to the west of the Site and Somerset Levels SPA located 4 km to the east of the Site;

- Bridgwater Bay Site of Special Scientific Interest (SSSI) and NNR - situated approximately 2.4km to the west of the Site at its closest point. The SSSI forms part of the Severn Estuary SPA and Ramsar Site. Part of the Bridgwater Bay SSSI also forms part of the Severn Estuary Special Area of Conservation (SAC), located approximately 2.4km to the north west of the Site at its nearest point. This area is designated for its important populations of wildfowl and waders, its coastal habitats and three annex II species of fish;

- Catcott, Edington and Chilton Moors SSSI is situated 3.1km to the east of the Site. This SSSI forms part of the Somerset Levels SPA and Ramsar Site. The Somerset Levels and Moors SPA and Ramsar Site is designated for its important assemblages of wintering wildfowl and waders including four Annex I species.

3.3.6 The Environment Agency flood maps (which do not take account of flood defences) indicate that the majority of the Site is in Flood Zone 3 (defined as land with a 1 in 100 or greater annual probability of fluvial flooding or with a 1 in 200 or greater annual probability of tidal flooding). Some small areas are located in Flood Zone 2 and 1, with medium and low respectively probability of flooding. The tidal reaches of the River Parrett pass within 5km west of the Site and tidal flood defences have been constructed along the Parrett Estuary which are effective in this location and will shortly be supplemented by the Bridgwater Tidal Barrier, due for delivery by 2024, as a comprehensive, long-term solution. Detailed flood modelling demonstrating low risk of inundation has been completed as part of the baseline and evidence base and it is important to note that no flood events have affected the site since its construction.

3.3.7 The natural geology consists of silt/clay alluvium overlying interbedded mudstone and limestone of the Blue Lias. The upper part of the alluvium has been reworked due to construction of the ROF, and there are greater thicknesses of fill associated with areas of historical development and waste disposal. Localised areas of contamination are generally associated with the presence of fill materials and, as stated above the Site is being remediated as part of a previous planning consent.

3.3.8 Rest groundwater levels in the alluvium and bedrock are typically 0.5 to 1.5 m below current ground level. The pattern of shallow groundwater flow is complex, but it is likely to be predominantly in the direction of the nearest surface water drain (‘rhyne’). Deeper groundwater flow in bedrock is indicated to be in a northerly direction.

3.3.9 With regards to archaeology, recent investigations carried out along the route of the Gravity Access Road uncovered evidence of prehistoric activity in the form of a rectangular ditched enclosure which has been tentatively dated to the Early to Middle Bronze Age. The same investigations also uncovered several east to west orientated field boundary ditches from which a small quantity of Roman pottery was recovered and suggested the area was subject to intensive agricultural activity at the time. Additional excavations on the Site also uncovered a substantial curvilinear ditch dated by pottery to the Middle to Late Iron Age and a substantial masonry wall which through pottery finds has been dated to the Romano-British period, potentially to the 3rd or 4th century AD.

3.3.10 There are no listed buildings within the Site. The adjacent historic settlements of Puriton and Woolavington both contain churches which are medieval and Grade I Listed Buildings. Both villages also contain several Grade II Listed Buildings of more modern origin, most of which were originally farmhouses. There are two Scheduled Monuments in the wider area: Brent Knoll and Down End motte with two baileys.

3.3.11 The site falls within three Landscape Character Areas: Levels and Moors (Levels), Lowland Hills (Polden Hills) and Levels and Moors (Clay Moors). To the south of the Site the ground begins to rise up more steeply to form the Polden Hills. From the site centre, the Quantock Hills Area of Outstanding Natural Beauty (AONB) lie approximately 12km to the south-west of the site and the Mendip Hills AONB approximately 14km to the north and north-east of the site.

3.3.12 There are three solar farms located around and outside the Site boundary, to the west, north-west and north-east.

3.3.13 The Site is not within an Air Quality Management Area, nor is it classed as a sensitive area as defined by the EIA Regulations (Regulation 2).

4 Proposed Development

4.1 Overview

4.1.1 The Proposed Development will facilitate the delivery of the Gravity Enterprise Zone. The description of development, as currently anticipated, is as follows:

any operations or engineering works necessary to enable the development of the Site, including demolition, excavation and earthworks, the formation of compounds for the stockpiling, sorting and treatment of excavated materials, import of material to create development platforms, piling, and any other operations or engineering necessary for site mobilisation, office and worker accommodation, communications, drainage, utilities and associated environmental, construction and traffic management.

the development of a smart campus including:

- commercial building or buildings with a total Gross External Area of up to 1,000,000m^2 which would sit within current Use Classes E (a)- (g), B2, B8 and sui generis floorspace uses and
- a range of buildings up to 100,000m^2 within Use Classes C1, C2, E (a) – (g), F, B8, including restaurants / cafes, shops, leisure, education and sui generis uses and
- up to 750 homes in Use Class C3.

together with associated infrastructure including restoration of the railway line for passenger and freight services, rail infrastructure including terminals, sidings and operational infrastructure and change of use of land to operational rail land, multi-modal transport interchange, energy generation, energy distribution and management infrastructure, utilities and associated buildings and infrastructure, digital infrastructure, car parking, a site wide sustainable water management system and associated green infrastructure, access roads and landscaping.

4.1.2 The Proposed Development will be defined by a series of parameter plans to define the flexibility in the development consented by the LDO. The parameter plans will define demolition, built development landscaping and infrastructure to be covered by the LDO. Draft parameter plans are as follows and provided in **Appendix F**:

- Demolition;
- Land Uses;
- Transport Movement Strategic;
- Transport Movement Micro Mobility;
- Building Heights;
- Strategic landscape; and
- Infrastructure Utilities

4.1.3 Whilst often an LDO is made prior to the commencement of any development on a Site, in this case there is already a planning consent that covers the majority of the Gravity Site, with remaining large parts of the site also ‘safeguarded for energy uses, rail reinstatement and leisure uses’. It is noted that the access road is currently being implemented and due for completion in late Summer 2021, and Gravity could fully implement the further aspects of the 2017 Planning Consent if required to do so to support early delivery ahead of the LDO and

has a number of related live enquiries. Once the LDO is made and adopted, Gravity will transition to the new consent.

4.2 Strategies supporting the Proposed Development

4.2.1 There are a number of Strategies that will underpin the Proposed Development, including a Clean and Inclusive Growth Strategy, an Environmental, Social & Governance (ESG) Policy, a Digital Vision, an Energy Strategy, a Water Strategy and a Utilities Strategy.

4.2.2 The Clean and Inclusive Growth Strategy creates a route to delivering clean and inclusive economic growth at Gravity, creating a smart campus and integrated community that delivers the 4th Industrial Revolution. Key themes are established, from an evaluation of the UN Sustainable Development Goals relevant to Gravity, with over 50 priorities being defined to help translate ambition into strategy and delivery. The Gravity ESG policy flows from this and links to a monitoring and reporting regime to communicate progress and outcomes. Early work on place shaping will seek to enable an integrated live, work, play community with recognition of wellbeing and mental wealth as a valuable asset, and to enhance self-awareness within the future workforce.

4.2.3 The Digital Vision creates a route map to underpin transformation, and the step change need to attract high value occupiers and invest in infrastructure fit for the future, aligned with national and local policy and strategy objectives to transform the way we work and operate.

4.2.4 The Energy Strategy will seek to demonstrate that adequate energy provision and connectivity is planned to support the delivery of Gravity and the scenarios to be set out and consented within the Gravity LDO. The Energy Strategy will include details on associated phasing, management and implementation plans which will cover any transitionary and short-term solutions with suggested five-year time horizons, considering potential uses / demands on Site and evolving solutions without being technology specific.

4.2.5 The Proposed Development will also include a **Gravity Skills Charter**, to foster social value during construction and in operation, through local employment opportunities, local training and workforce development, improving resilience, young people's engagement and the creation of pathways to work, apprenticeships, and improved choices to enable local connectivity, homes, and accessibility to green spaces and wider leisure opportunities..

4.2.6 Similarly, a **Gravity Business Charter** will seek to stimulate business and supply chain opportunities.

4.2.7 A Gravity investment plan will be developed to consider phasing of infrastructure and priorities for investment of business rates to enable implementation and delivery as a priority and to maximise the benefits that Enterprise Zone status can delivery for the locality.

5 EIA Process

5.1 EIA Regulations

5.1.1 The EIA for the proposed LDO is governed by the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) ("the EIA Regulations"). The EIA Regulations transpose the provisions of European Council and Parliament Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 2014/52/EU ("the EIA Directive"). To ensure that the provisions of the EIA Regulations would continue to be implemented in the same way or an equivalent way following the exit of the United Kingdom from the EU at the end of the transition period, appropriate amendments were made by The Environmental Assessments and Miscellaneous Planning (Amendment) (EU Exit) Regulations 2018. There has been no substantive change to EIA requirements as a result of the departure of the UK from the European Union. Regulation 32 of the EIA Regulations provides for amendments to be made to the EIA process so as to ensure that the requirements of the EIA Directive are met where a local planning authority proposes to grant planning permission by local development order.

5.1.2 The process of EIA is defined in the EIA Regulations at regulation 4 and for the LDO comprises:

(a) the preparation of an environmental statement;

(b) consultation, publication, and notification required by, or by virtue of, the EIA Regulations or any other enactment in respect of EIA development; and

(c) the steps required to be taken by SDC in examining the environmental information, reaching a reasoned conclusion on likely significant effects, integrating that conclusion into the decision on adoption of the LDO, including whether it is appropriate to impose monitoring measures.

5.1.3 Environmental information comprises the ES, including any further or other information, any representations made by the bodies required to be notified by the EIA Regulations and any other representations duly made by any other person about the environmental effects of the Proposed Development.

5.1.4 Regulation 18 and Schedule 4 of the EIA Regulations detail the required information for inclusion in an ES. For ease of reference Regulation 18 and Schedule 4 are presented in **Appendix J.**

5.2 Screening

5.2.1 In accordance with the EIA Regulations in relation to Local Development Orders, a Screening Opinion was adopted by Sedgemoor District Council on 23rd June 2021 (application no 99/21/00127) that determined the Proposed Development to be an EIA Development by virtue of being a Schedule 2 development likely to have significant effects on the environment by virtue of factors such as its nature, size or location. The EIA process is required to be followed in order for the LDO for the Proposed Development to be adopted.

5.3 Scoping

5.3.1 Although scoping is a voluntary part of the EIA process, it is a very useful process as it enables identification and assessment of the likely significant environmental effects of the Proposed Development to be informed by the consultation bodies, whose opinions will be taken into consideration through the iterative process of preparing the ES in conjunction with work on refining the description of the Proposed Development. The Scoping Opinion will not be binding. If, at any time before the adoption of the LDO, SDC is of the opinion that the requirements of regulation 18(3) and (4) cannot be satisfied without the ES being

supplemented with additional information in order for SDC to reach a reasoned conclusion on the likely significant effects of the Proposed Development then SDC must ensure that additional information is provided ("further information"). Any such further information will form part of the ES.

5.3.2 An evidence-led approach has been taken to scoping with front-loading of the baseline data collection where available to provide an informed scoping process and to allow the ES to focus on those aspects of the development likely to lead to significant environmental effects. Information has also been taken from the previous planning application and subsequent information relating to planning condition discharge to inform the proposed scope of the ES where relevant. Where surveys have already been undertaken, or are being progressed, this is detailed in **Chapters 7-16** below along with how the findings of these surveys have informed the scope and approach of the ES.

5.3.3 Consultation with relevant statutory and non-statutory bodies will be undertaken on this draft Scoping Report. Once this consultation is complete, the Scoping Report will be updated to address any comments and will be adopted by SDC as the Scoping Opinion for the ES for the Gravity LDO.

5.4 Consultation

5.4.1 The Proposed Development is being progressed through an iterative process of design, assessment, and review. It is therefore the intention that the LDO proposals to be consulted upon will incorporate measures to mitigate potential adverse environmental effects, and to enhance environmental benefits, wherever possible through its design. To ensure that likely significant adverse environmental effects are not inadvertently concealed by the inclusion of enhancement measures in the EIA process, the ES will not include possible enhancement measures when assessing the likely significant environmental effects of the Proposed Development.

5.4.2 Consultation with relevant statutory and non-statutory bodies has informed some elements of this scoping stage and will continue to inform the iterative design and EIA process. This includes consultation with SDC, where specific elements in relation to the EIA are discussed and agreed on an ongoing basis.

5.4.3 A Gravity LDO Delivery Group has been established to drive forward the LDO and facilitate ongoing collaboration. The Delivery Group includes key statutory consultees; SDC, SCC, Highways England, Environment Agency, Natural England, and Network Rail. The proposed approach to the EIA has been discussed with the Delivery Group.

5.4.4 There are also several sub-groups to the Delivery Group, including the Transport, Utilities and Environmental Sub-Groups, which facilitate further consultation where required.

5.4.5 Specific consultation relating to those topics proposed to be scoped into the ES, which has been undertaken to date, is set out within discipline specific details in **Chapters 7-16**.

5.4.6 Consultation with statutory and non-statutory consultees, along with the local community through the LDO consultation process, will continue to inform both the EIA and the design of the Proposed Development.

5.5 Assessment

5.5.1 In general terms, the main stages in preparing the ES are as follows:

- Data Review – draw together and review available data;
- Baseline Surveys – undertake baseline surveys and monitoring;

- Scoping – identify significant issues, determine scope of the ES through the process of preparing a Scoping Opinion following consultation with the consultation bodies;

- Assessment and iteration – assess likely significant effects of development, evaluate alternatives, provide feedback to design team on adverse effects, incorporate any necessary mitigation, assess residual effects of mitigated development, and consider whether monitoring of mitigation of likely significant effects is appropriate; and

- Preparation of the ES in which the information required to be provided by Schedule 4 is set out.

5.5.2 The proposed scope of the ES and approach to the assessment of likely significant effects is set out in **Chapter 6**.

5.6 Mitigation

5.6.1 One of the most important functions of the EIA process is to identify ways to mitigate likely significant adverse environmental effects. The EIA Regulations require an ES to contain: "*A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment*".

5.6.2 A hierarchy of methods for mitigating significant adverse effects will be followed; these are, in order of preference:

- Avoidance – designing the Proposed Development in such a way that avoids effects on the environment (e.g., avoiding siting residents at levels that could be affected by flood risk or avoid likely significant adverse landscape and visual effects by identifying a maximum height restriction on new development);

- Reduction – design the development or employ construction methodologies such that significant effects identified are reduced (e.g., employment of sustainable drainage measures to mitigate effects of development in flood prone areas); and

- Compensation – providing off-site measures to compensate for harm where onsite mitigation has not been possible (e.g., financial contributions towards local infrastructure).

5.6.3 Environmental effects remaining after mitigation measures have been incorporated are termed residual effects and these will be fully described in the ES.

Embedded Mitigation

5.6.4 There is a distinction between mitigation that is incorporated or 'embedded' into the design of the development (embedded mitigation) and mitigation that is subsequently identified to prevent, reduce, or offset any remaining significant adverse effects (further mitigation). Embedded mitigation may include, for example, determining the materials of buildings to mitigate visual effects, or incorporation of drainage attenuation.

5.6.5 Embedded mitigation evolves through the iterative design process and early consideration of the likely significant impacts is essential to incorporating suitable embedded mitigation measures. Design principles of the development have been established and the ES will document the embedded mitigation measures that have been employed within the design in response to the identification of potentially significant effects. The ES, within each of the topic chapters as appropriate, will also document the further mitigation that is required to complement the embedded mitigation.

5.6.6 The Design Guide will identify design principles for a deliverable scheme that responds to the Site's technical constraints and opportunities. Mitigation set out in the ES will incorporated into the Design Guide.

Further Mitigation

5.6.7 Further mitigation measures are defined as those which require additional activity to be achieved, are identified through carrying out assessments and do not form part of the scheme design in their own right. For example, this will include specific measures to control noise pollution from a manufacturing facility implemented on the Site that could be controlled through a planning condition. Where significant adverse effects have been identified through assessments, appropriate mitigation measures will be identified wherever possible to mitigate residual environmental impacts.

5.7 Monitoring

5.7.1 If SDC resolves to adopt the LDO then it must consider whether it is appropriate to impose monitoring measures. A “monitoring measure” is "*a provision requiring the monitoring of any significant adverse effects on the environment of proposed development including any measures contained in—*

(a) a condition imposed on the grant of planning permission; or

(b) a planning obligation".

5.7.2 It is important to note that the Regulations only require SDC to consider the appropriateness of monitoring effects that are both significant and adverse. The ES will therefore ensure that it is clear to the reader which, if any, effects are both adverse and significant and therefore may be appropriate for monitoring measures to be considered.

5.7.3 It is important to note that Regulation 26 (3) of the EIA Regulations states that planning authorities should:

(b) take steps to ensure that the type of parameters to be monitored and the duration of the monitoring ***are proportionate to the nature, location and size of the Proposed Development and the significance of its effects on the environment****; and*

(c) consider, in order to avoid duplication of monitoring, whether any existing monitoring arrangements carried out in accordance with an obligation under the law of any part of the United Kingdom, other than under the Directive, are more appropriate than imposing a monitoring measure.

5.7.4 Schedule 4 of the EIA Regulations identifies that an ES should identify *“any proposed monitoring arrangements*”. The ES will therefore provide a schedule of proposed monitoring to clearly identify any monitoring that is proposed in relation to any significant adverse effects that have been identified. Any such monitoring will be proportionate, as noted above.

5.8 Environmental Statement

5.8.1 The ES will describe the Proposed Development and set out the policy context; give full detail of the EIA methodology and any technical methodologies and data used in support of the assessment; present the assessment of likely significant environmental effects; detail any mitigation measures that have been employed; and provide a schedule of any proposed monitoring measures. The ES will present the residual effects and impact interactions as described in **Chapter 6** below.

5.8.2 Under requirement 9 of Schedule 4 of the 2017 EIA Regulations (as amended 2018) a Non-Technical Summary of the ES shall also be provided.

5.9 Consideration of Alternatives

5.9.1 The 2017 EIA Regulations (as amended 2018) require an ES to include “*A description of the reasonable alternatives (for example in terms of development design, technology, location,*

size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."

5.9.2 This legal requirement is expressed in very general and high-level terms, requiring only the inclusion of a "*description*" of "*reasonable*" alternatives and an "*indication*" of "*main*" reasons. Although a full description of alternatives and a full assessment of their likely environmental effects are not required, sufficient detail should be provided to allow for a meaningful comparison between the alternatives and the Proposed Development.

5.9.3 It is a matter for the developer to decide whether to consider alternatives and, if so, which it intends to consider. The EIA Regulations do not expressly require consideration of alternatives.

5.9.4 The ES will fulfil the requirements of the EIA Regulations through identifying the reasonable alternatives considered by the developer and explain the main reasons for the choices made. A comparison of environmental effects will also be provided. It is anticipated that such reasons for choosing between reasonable alternatives may include planning policy, viability, design quality, market requirements, site constraints and opportunities, and environmental effects.

5.10 EIA Team

5.10.1 Regulation 18 of the EIA Regulations requires that, to ensure the completeness and quality of environmental statements, "*the developer must ensure that the environmental statement is prepared by competent experts*".

5.10.2 In accordance with EIA Regulation 18 the ES will be "*accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts*." At this scoping stage, **Table 5:1** identifies the organisations that will contribute to the ES and provides an outline of their relevant expertise.

Table 5:1: ES Team and Relevant Experience

EIA Topic	Organisation	Relevant Experience
EIA Coordination and ES Production	Stantec	Stantec is a founder member of the Institute of Environmental Management and Assessment's (IEMA) EIA Quality Mark scheme for quality in EIA. Stantec has a dedicated EIA team that specialises in leading the EIA process for development projects, including land development, regeneration, energy, and infrastructure projects. Stantec typically leads 10-20 EIA projects each year. Each of Stantec's EIA team have suitable academic and professional qualifications, with professional qualifications including Principal EIA Practitioner, Practitioner and Associate membership of IEMA, member of Royal Town Planning Institute and Chartered Environmentalist.
Economics	Stantec	Stantec has a dedicated planning economics team that specialises in undertaking economic profiling assessments, economic impact assessments and economic appraisals for development schemes, including land development, regeneration, and infrastructure projects. Stantec's Planning team includes experienced staff, who have relevant academic and professional qualifications, including those who are chartered members of the Royal Institution of Charted Surveyors (RICS) and Royal Town Planning Institute (RTPI), and members of the Institute of Economic Development (IED). In addition, Stantec is a corporate member of RICS and the IED.
Human Health, Wellbeing, and Inclusion	Stantec	Stantec is a founder member of the Institute of Environmental Management and Assessment's (IEMA) EIA Quality Mark scheme for quality in EIA. Stantec UK has over 10 years of experience in managing and coordinating health impact assessments. Stantec is part of the Health Group of IEMA Impact Assessment Network and individuals have completed the International Health Impact Assessment Consortium (IMPACT) training scheme at the University of Liverpool. We have prepared health impact assessments and health Environmental Statement chapters for a portfolio of urban projects, including regeneration projects and sustainable urban extensions.
Transport and Access	Stantec	Stantec has a dedicated transport team that specialises in undertaking transport planning, modelling and appraisal for development schemes, including land development, regeneration, and infrastructure projects. Stantec's transport team includes experienced staff, who have relevant academic and professional qualifications, including those who hold Transport Planning Professional (TPP) and those who are Chartered Members of the Institute of Highways and Transportation (CMIHT). In addition, Stantec holds corporate membership of the Transport Planning Society (TPS) and the Chartered Institute of Highways and Transport (CIHT).
Noise and Vibration	Stantec	Stantec has a dedicated acoustics team that specialises in undertaking noise and vibration assessments for development projects, including land development, regeneration, energy and infrastructure projects. All of Stantec's acoustics team have suitable academic and professional qualification, including being registered with the Institute of Acoustics (IOA).
Air Quality	Stantec	Stantec has a dedicated air quality team that specialises in undertaking air quality assessments for development projects, including land development, regeneration, energy and

EIA Topic	Organisation	Relevant Experience
		infrastructure projects. Stantec typically undertakes in excess of a hundred air quality assessments each year. All of Stantec's air quality team have suitable academic and professional qualification, including being registered with the Institution of Environmental Sciences (IES) and Institute of Air Quality Management (IAQM).
Biodiversity	Ecology Solutions	Ecology Solutions is a specialist practice offering ecological advice to a wide range of private and public sector clients. We offer the full range of ecological services undertaken by our team of full-time ecologists as well as a number of site-based ecologists and several part-time specialists, based at offices in Worcestershire, Hertfordshire, and Manchester. The majority of staff are members of the Chartered Institute of Ecology and Environmental Management (CIEEM) and hold class survey licenses for protected species (including for Great Crested Newts, bats [levels 1 and 2] and Dormice). In addition, Dominic Farmer is one of only a small number of Bat Mitigation Class Licence and Great Crested Newt Low Impact Class Licence holders in England. The practice is proficient in carrying out all protected species surveys as well as Phase 1 habitat and NVC surveys.
Water Environment	Stantec	Stantec has a designated Water Management team with many years of experience in, amongst other areas, the assessment of flood risk, hydrology and hydraulic modelling, flood management, the Water Framework Directive, surface water drainage and river engineering. Stantec's Water Management team includes experienced staff who have relevant academic and professional qualifications, who are competent experts in the context of the EIA Regulations and for our contributions to the Environmental Statement. The authors and reviewers of the document are all experienced engineers and members of chartered institutions such as the Chartered Institution of Water and Environmental Management (CIWEM) and/or the Institution of Civil Engineers (ICE).
Landscape and Visual	The Richards Partnership	The Richards Partnership is an established practice of Landscape Architects, Environmental Planners and Urban Designers which was set up in 2005 by Peter Richards and Jo Bruce-Gardner, both Chartered Landscape Architects with over 25 years' experience. The Practice is registered with the Landscape Institute and employs suitably qualified and experienced staff. It has a strong track record in writing Landscape and Visual Impact Assessments, both as standalone documents and as part of wider Environmental Statements. All work will be reviewed by one of the partners prior to being issued.
Climate Change	Stantec	Stantec is a founder member of the Institute of Environmental Management and Assessment's (IEMA) EIA Quality Mark scheme for quality in EIA and are experts in the context of the EIA regulations and for their contributions to the Environmental Statement. Stantec's Environment, Energy, and Infrastructure (EEI) team specialises in undertaken greenhouse gas (GHG) assessments and climate resilience and adaptation assessments development projects, including land development, regeneration, energy and infrastructure projects. Each of Stantec's EEI team have suitable academic and professional qualifications, with professional qualifications including Principal EIA Practitioner, Practitioner and Associate membership of IEMA and Chartered Environmentalist.

EIA Topic	Organisation	Relevant Experience
Cultural Heritage	Wessex	Wessex Archaeology is the market leader in the provision of quality archaeological and heritage services, delivered from a UK wide network of offices. Established for 40 years Wessex Archaeology offers an unrivalled range of services above ground, below ground and underwater. We work in partnership with planners, designers, developers, and property managers to deliver practical heritage solutions. With a strong reputation for quality and innovation, we combine academic rigour with a highly practical focus on clients' requirements. We are a Chartered Institute for Archaeology (CIfA) Registered Organisation and maintain an ISO9001:2015 accredited Quality Management System.
Ground Conditions	Ashfield Solutions	Ashfield Solutions Group are a specialist UK multi-disciplinary environmental risk consultancy, involved in the assessment and management of industrial and commercial land assets. Our staff have extensive experience in environmental assessment, risk mitigation and remediation contracting.

6 Proposed Scope of the ES

6.1 Technical Scope

6.1.1 The technical scope describes the environmental topics that should be addressed by an ES, in line with the requirements of Regulation 18 and Schedule 4 of the EIA Regulations. Schedule 4 sets out that the ES must include a description of the aspects of the environment that are likely to be significantly affected by the Proposed Development.

6.1.2 This requirement and the broad categories set out in Schedule 4, along with others which are considered to have the potential to lead to significant environmental effects, have been interpreted and applied in the context of the LDO. **Table 6.1** therefore sets out those topics that are proposed to be scoped into and out of the EIA.

6.1.3 Chapter/section references are provided to demonstrate where these topics have been included within the ES Scope. **Chapters 7-16** of this report provides a detailed analysis of the resultant proposed technical scope of the EIA, while **Chapter 17** identifies those topics which it is proposed to scope out of the ES as it can be concluded on the basis of the evidence available that likely significant environmental effects can be excluded.

Table 6.1: Technical Scope

EIA Regulations Topic	Scoped in (✓)/ Scoped out (X)?	Explanation within this Scoping Report
Population	✓	Chapter 7 Economics Chapter 8 Health, Social and Wellbeing
Human Health	✓	Chapter 8 Health, Social and Wellbeing Chapter 9 Transport and Access Chapter 10 Noise and Vibration Chapter 11 Air Quality Chapter 13 Water Environment Section 17.2 Ground Conditions Section 17.9 Risks of Accidents and Disasters
Biodiversity (for example Flora and Fauna)	✓	Chapter 12 Biodiversity Section 17.4 Lighting Section 17.5 Arboriculture
Land (for example land take)	X	Section 17.2 Ground Conditions Section 17.3 Agricultural Land
Soil (for example organic matter, erosion, compaction, sealing)	X	Section 17.2 Ground Conditions
Water (for example hydro morphological changes, quantity, and quality)	✓	Chapter 13 Water Environment Section 17.2 Ground Conditions
Air	✓	Chapter 11 Air Quality
Climate (for example greenhouse gas emissions, impacts relevant to adaptation)	✓	Chapter 15 Climate Change
Material assets	✓	Chapter 16 Cultural Heritage Section 17.2 Ground Conditions Section 17.6 Waste

EIA Regulations Topic	Scoped in (✓)/ Scoped out (X)?	Explanation within this Scoping Report
Cultural heritage (including architectural and archaeological aspects)	✓	Chapter 14 Landscape and Visual Chapter 16 Cultural Heritage
Landscape	✓	Chapter 14 Landscape and Visual
The Risk of Major Accidents and/or Disasters	X	Section 17.9 Risk of Accidents and Disasters
The inter-relationship between the above factors	✓	Chapter 6 (Section 5: Impact Interactions)

6.1.4 The following section sets out the principles for the temporal and spatial scope, and the approach to the assessment of effects, that will be applied to the EIA of the topics identified in **Chapter 7-16**.

6.2 Temporal Scope

Environmental Baseline

6.2.1 As a general principle, environmental effects will be assessed by comparing the predicted state of the environment without the Proposed Development, with the state of the environment with the Proposed Development for a particular year. This will necessitate predicting how current conditions at the Site may change without the LDO being made and implemented.

6.2.2 The year 2032 has been identified as the assessment year for operational effects for the majority of the technical assessments to be included in the ES. This year has been identified as it is the end of the current Local Plan period and a date by which it is reasonable to assume that the development approved by the LDO will have been delivered.

6.2.3 The climate change assessment will consider the assessment year (2032) as well as 25-year intervals up to 2099, as this is the final year available in the UKCP18 climate projections dataset.

6.2.4 As required by the EIA Regulations, the ES will describe the relevant aspects of the current state of the environment at the Site and in the surrounding area.

6.2.5 The current conditions at the Site and in the surrounding area will be factored forward to predict likely conditions at the site in 2032 to enable the effects of the LDO to be considered against a 'do nothing' scenario.

6.2.6 The following elements will therefore be included in the 2032 Baseline:

- The implemented 2017 Planning Consent. This will be based on the note setting out the Parameters established by the 2017 Planning Consent and Environmental Statement provided at **Appendix D**. The safeguarded land uses will not be included in the 2032 baseline as they have not been granted consent (i.e., they were safeguarded only and would require a new planning permission or consent to progress).

- The approved village enhancement scheme was identified as mitigation for the 2017 Planning Consent and will be implemented one year from the opening of the link road, i.e., in Summer 2022. Therefore, this will be factored into the 2032 baseline.

- Landscaping associated with the link road, which is due to be implemented from autumn 2021.

- Other existing and approved development in the surrounding area. This includes development that has been allocated in the Local Plan 2011-2032. These developments, either allocated, approved or considered likely to have been approved and implemented by 2032 are shown in the table in **Appendix G** and on the plan at **Appendix H**. Schemes that are proposed to be scoped out of the 2032 baseline, and the rationale for so doing, have also been included in the table in **Appendix G.** The review undertaken to identify these developments included all development within 3km of the Site and developments subject to EIA within 5km of the Site. None of the latter are proposed to be scoped in, therefore the plan at **Appendix H** shows the 3km buffer only.

- Likely changes to the natural environment between now and 2032. This will include natural changes such as growth in vegetation and establishment of habitats, especially of landscaping implemented as part of the HEP. It will also include anthropogenic changes such as changes to climate, air quality and human behaviours where there can be a high degree of confidence that such changes will occur (for example the transition towards electric vehicles on the basis of clear Government policy on the phasing out of internal combustion engines and the increase in bus services to avoid private vehicle usage as promoted in the recently published national bus strategy). Each chapter of the ES will outline as appropriate how these changes have been considered in establishing the 2032 baseline.

6.2.7 The approach set out above is consistent with the EU's *Guidance on the preparation of the Environmental Impact Assessment Report* (2017), which states:

"The state of the environment and the nature of impacts such as pollution rates or emission limits change over time, and this has to be accounted for in the Baseline assessment. In addition, the Baseline should consider Projects in the vicinity that exist and/or that have been approved (see Part B section 1.4.3 on Cumulative Effects). The Baseline should, therefore, be dynamic, going beyond a static assessment of the current situation. This is especially important for issues where there is considerable uncertainty, such as climate change, or for longer-term developments, such as large infrastructure Projects."

Duration of Effects

6.2.8 Environmental effects will be classified as either permanent or temporary, as appropriate. Permanent changes are those that are irreversible (e.g., permanent land take) or will last for the foreseeable throughout the operation the operation of the Proposed Development.

6.2.9 The duration of temporary environmental effects will be defined as short, medium, or long term based on the likely durations of the construction and operational phases of the development. These definitions will be considered within the assessment of the likely significant effects and will be set out in the ES.

6.2.10 The implementation of the LDO will be market-led and therefore a construction programme is not available at this time. It is anticipated that construction will be complete by 2032 and therefore there is the potential for construction effects to be long-term but not permanent. It is equally possible for the construction to conclude before this date.

6.2.11 Where environmental effects will be infrequent or intermittent (such as effects related to activities that will not be continuous during construction) this will be noted in the ES; and the frequency of these activities will be considered in the assessment.

Phases of Scheme

6.2.12 Two discrete phases of the Proposed Development will be considered in relation to the likely significant effects: demolition and construction; and operation.

6.2.13 The majority of demolition of the former ROF Site has been undertaken through the Site demolition and remediation works that were completed in November 2020 under the remediation planning consent and therefore will not form part of the ES However, there are some remaining buildings to be demolished in the context of development to be taken forward under the LDO.

Demolition and Construction

6.2.14 Certain environmental effects will only occur during the demolition and construction phase of the Proposed Development and will cease once construction activities have ceased. These will typically be the temporary effects of the scheme and will be described as “short-term”, “medium-term” or “long-term”, as appropriate, using the definitions determined to be appropriate and set out in the ES. Given the nature of the Proposed Development, it is anticipated that construction effects could be long term albeit temporary.

6.2.15 The Description of Development states the following for the enabling works:

“including demolition, excavation and earthworks, the formation of compounds for the stockpiling, sorting and treatment of excavated materials, import of material to create development platforms, piling, and any other operations or engineering necessary for site mobilisation, office and worker accommodation, communications, drainage, utilities and associated environmental, construction and traffic management.

6.2.16 Examples of environmental effects arising from this phase include but are not limited to:

- Demolition of buildings;
- Creation of dust;
- Risk of pollution during construction;
- Construction traffic movements; and
- Noise from construction activities.

Phases of Delivery

6.2.17 Given that development under the LDO will be market-led, it is not possible to predict phasing, as there is the potential for the LDO to be delivered as a single phase of development or broken into multiple phases.

Operation

6.2.18 Environmental effects that occur during the operation of the project will typically be permanent. Examples of permanent effects which might occur during the operation of the Proposed Development include but are not limited to:

- Changes to key viewpoints;
- Changes to the setting of heritage assets; and
- Changes to flood risk.

6.3 Spatial Scope

6.3.1 The spatial extent of each of the technical assessments will vary from one to another in accordance with the relevant policy and guidance for the assessment of that topic. Typically, the study area will comprise the Site and the surrounding area, but for some topics will extend

further from the Site boundary where there is the potential for effects to be significant over a wider area (e.g., as a result of effects on the wider landscape).

6.3.2 The study area for each technical assessment will be identified and described as appropriate in each of the topic chapters of the ES.

6.4 Assessment of Effects

Type of Effects

6.4.1 In assessing the significance of effects identified during the EIA, account will be taken as appropriate as to whether effects are:

- **Direct Effects** – Effects that are caused by activities which are an integral part of the scheme;
- **Indirect Effects** – Effects that are due to activities that are not part of the scheme, e.g., regeneration benefits attributable to the scheme;
- **Secondary Effects** – Effects that are induced from a direct effect;
- **Temporary Effects** – Environmental effects that occur during the construction of a project will typically be temporary.
- **Permanent Effects** – Permanent effects are those which are irreversible (e.g., permanent land take), will last for the foreseeable future (e.g., effects of noise on future residents);
- **Beneficial Effects** – Effects that have a positive influence on the environment; and
- **Adverse Effects** – Effects that have an adverse influence on the environment.

6.4.2 For clarity within the assessment, 'impact' will be used in relation to the outcome of the Proposed Development (e.g., the removal of habitat or the generation of emissions to air), while the 'effect' will be the consequent implication in environmental terms (continuing the above example, e.g., the loss of a potential bird breeding site or the reduction in local air quality).

Residual Effects

6.4.3 The incorporation of mitigation measures, primarily as part of the scheme design and construction phase, will be reported where appropriate and likely significant residual effects that remain will be described and assessed according to the significance criteria set out in **Table 6.2**.

6.4.4 As noted above, the EIA Regulations require that the ES describes likely significant effects of the Proposed Development. However, there is no legal definition of a likely significant environmental effect and interpretations differ. In accordance with the European Commission's Guidance on Scoping (2017), the ES will provide information on those effects that will influence decision-making or those where there is uncertainty about their magnitude. This approach is consistent with best practice for EIA in the UK.

6.4.5 The significance of an effect is typically the product of two factors: the value of the environmental resource affected and the magnitude of the impact, while consideration may also need to be given to the likelihood of an effect occurring. A significant effect may arise as a result of a slight impact on a resource of national value or a severe impact on a resource of local value. In addition, the accumulation of many non-significant effects on similar local resources geographically spread throughout the scheme may give rise to an overall significant effect on a receptor. An example of this might be the loss of ecological habitat of low value at many locations.

6.4.6 This approach to assessing and assigning significance to an environmental effect will rely upon such factors as legislative requirements, guidelines, standards and codes of practice, consideration of the EIA Regulations, the advice and views of statutory consultees and other interested parties and expert judgement. The following questions are relevant in evaluating the significance of likely environmental effects:

- Which risk groups are affected and in what way?
- Is the effect reversible or irreversible?
- Does the effect occur over the short, medium, or long term?
- Is the effect permanent or temporary?
- Does the effect increase or decrease with time?
- Is the effect of local, regional, national, or international importance?
- Is it a positive, neutral, or adverse effect?
- Are health standards or environmental objectives threatened?
- Are mitigating measures available and is it reasonable to require these?

6.4.7 Specific significance criteria will be prepared for each specialist topic as appropriate, based on the above and the generic criteria set out in **Table 6.2**.

6.4.8 Effects that are described as 'substantial, 'major or 'moderate' are determined to be *significant*; and effects that are described as 'minor' or 'negligible' are determined to be *not significant*.

Table 6:2: Significance Criteria

	Level of Effect	Criteria
Significant	**Substantial**	These effects are assigned this level of significance as they represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites and features of national or regional importance. A change at a county scale site or feature may also enter this category.
	Major	These effects are likely to be important considerations at a district scale and may become key factors in the decision-making process.
	Moderate	These effects, while important at a local scale, are not anticipated to be key decision-making issues.
Not significant	**Minor**	These effects may be raised as local issues but are unlikely to be of importance in the decision-making process.
	Negligible or No Effect	These effects are imperceptible, or within normal bounds of variation, or in the margins of forecasting errors. Such effects should not be considered by the decision-maker.

Cumulative Effects and Impact Interactions

6.4.9 The 2017 EIA Regulations require the consideration of the potential impact of inter-relationships and cumulative effects of "existing and/or approved development" with the development.

6.4.10 Given the approach as set out in **Section 6.2**, approved developments (or those considered likely to have been approved and implemented by 2032) are factored into the 2032 baseline, and therefore the assessment of likely significant cumulative effects with these developments is inherent to the assessment and will not be reported separately.

6.4.11 Potential impact interactions will be assessed within a separate chapter of the ES, as it will need to draw together the outcomes of individual topic assessments.

Uncertainty and Difficulties Undertaking the Assessment

6.4.12 The prediction of future effects and a 2032 baseline inevitably involves a degree of uncertainty. Where necessary, the ES will describe the principal factors giving rise to uncertainty in the prediction of environmental effects and the degree of the uncertainty.

6.4.13 Confidence in predictions will be engendered by employing accepted assessment methodologies, e.g., Guidelines for Landscape and Visual Impact Assessment Third Edition (GLVIA) (2013). Uncertainty inherent within the prediction will be described.

6.4.14 Uncertainty also applies to the success or otherwise of measures to mitigate likely significant adverse environmental effects. Where the success of a mitigation measure is uncertain, the extent of the uncertainty will be identified in the ES.

6.4.15 The ES will identify, in accordance with Schedule 4 of the 2017 EIA Regulations, any difficulties that have been encountered in undertaking the assessment.

6.4.16 At the time of writing this Scoping Report, in March and April 2021, the ongoing coronavirus pandemic means that some baseline survey work may require a different approach, for example in relation to traffic data for the Transport Assessment. Where alternative approaches require to be agreed with consultees, this is set out in the **Technical Chapters 7-16**.

7 Economics

7.1 Introduction

7.1.1 This chapter has been prepared by Stantec and sets out the scope of the economic assessment which will be reported in the ES. The chapter responds to the 'economics' ES topic. The economic context closely aligns with the planning policy context and the local council priority for investment and growth, creating a positive culture of being 'pro-business'. The Bridgwater Vision and the Sedgemoor Economic Development Strategy are key policy drives for local economic growth and transformation which directly relate to the Gravity site and its realisation as an enterprise zone.

7.1.2 Economics has been scoped into the ES owing to the potential for likely significant effects (positive or negative) resulting from the construction and operational stages of the proposed development on sensitive receptors within the local economy. The description of development sets out development parameters of a scale that has the potential to generate large scale temporary construction employment. At the operation phase, the floor space that can be accommodated within the proposed development suggests capacity to host considerable long-term operational employment activity.

7.1.3 Gravity has the potential to attract significant levels of investment from national and international sources that will result in labour market effects including job creation, productivity gains, supply chain impacts, and agglomeration benefits.

7.1.4 As outlined in **Chapter 2**, Gravity aligns to and can play a key role in delivering economic strategy outcomes locally and at UK level. An overview of the site and a general description of the development parameters are provided in **Chapter 3** and **Chapter 4** respectively.

Account will be taken of the national infrastructure projects currently under construction such as Hinkley Point C, recognising the economic impact and temporary nature of the employment, with 25,000 workers in construction and 900 in operation of the plant from 2026.

7.1.5 The proposed development creates an opportunity to provide continuity of employment, transitioning temporary labour force into new deployment opportunities, with further training and skills development to secure sustained employment.

7.2 Works Completed to Date

7.2.1 A socio-economics chapter was included in the 2013 ES and 2017 ES Addendum for the Huntspill Energy Park. These assessments provided an analysis of baseline socio-economics data and an assessment of the scheme's impacts on sensitive receptors within the labour market.

7.3 Study Areas

7.3.1 The assessment will be focused on the temporal and spatial scales at which there is potential for likely significant effects to occur from the proposed development. An appropriate Study Area corresponding to local authority administrative boundaries, census geography and built-up areas will be adopted to ensure accurate use of data.

7.3.2 The following Study Area is proposed for the economic assessment:

- Labour Market Study Area: the M5 Corridor Functional Economic Market Area (FEMA). This area has been chosen as it takes into account Travel to Work Areas (TTWAs), housing market areas and commercial property markets to best capture the mobility of labour across administrative boundaries.

7.4 Baseline Conditions

Desk Based Data Collection

7.4.1 Detailed desk-based research covering the Study Area described above will be collated to establish the key economic baseline conditions and receptors which should be taken into account in the assessment. Initial analysis of the current economic environment undertaken to date indicates the following:

Population

7.4.2 The site lies in the Sedgemoor District Council area, which has an estimated population of 123,200 (up from 113,800 in 2010)[1]. The population of Sedgemoor is older than the regional or national average, with 24.0% of residents being aged 65+, which is above the South West (22.2%) and England (18.4%)[2].

Labour Market

7.4.3 Sedgemoor is part of the Heart of the South West Local Enterprise Partnership (LEP) which covers 16 local authority areas across Somerset and Devon. This area is home to nearly 1.8 million people, 72,000 enterprises, four universities and ten further education colleges[3].

7.4.4 At the sub-regional level, the M5 Corridor Functional Economic Market Area (FEMA) boundaries are consistent with the combined authority boundaries for Sedgemoor and Taunton Deane. The FEMA has an estimated population of 243,200, with a working age population of 142,000.

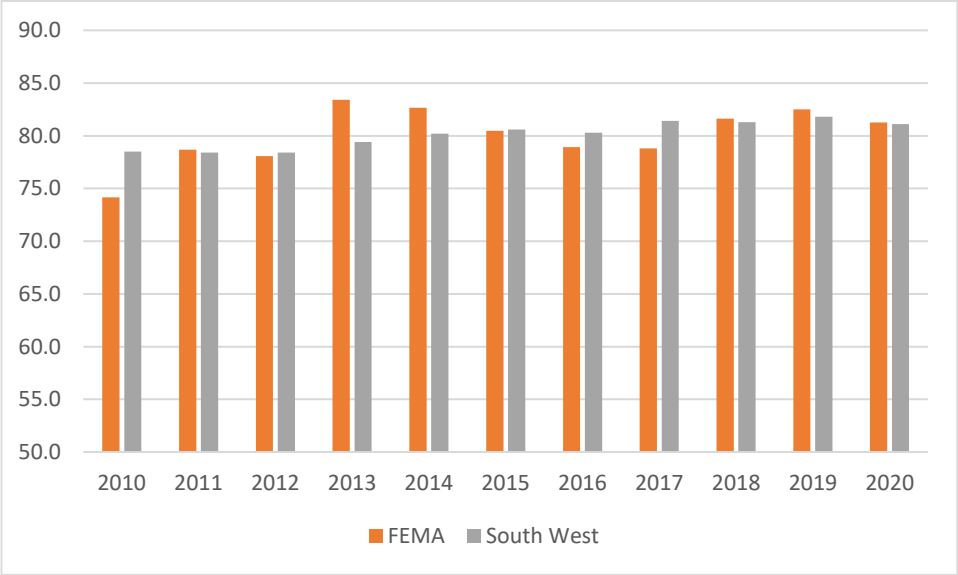
7.4.5 The labour market within the FEMA displays similar rates of economic activity compared with the wider South West region and there has not been significant divergence over the past decade, as depicted in **Figure 7.1**

[1] Office for National Statistics Population Estimates (2019 data)

[2] Office for National Statistics Population Estimates (2019)

[3] Heart of the South West LEP. Available: https://heartofswlep.co.uk/about-the-lep/what-is-the-lep/

Figure 7.1 Economic Activity Rate

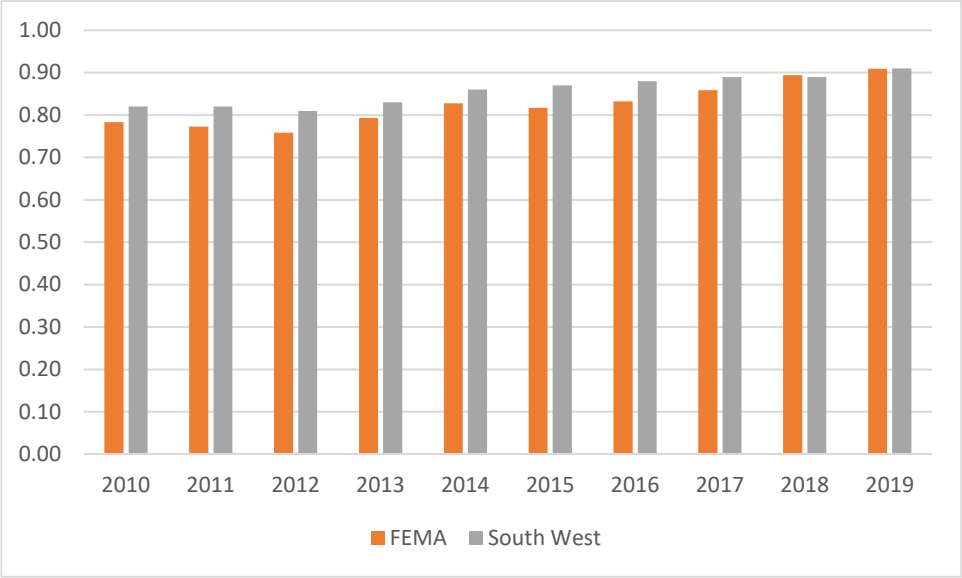


Source: Stantec analysis of Annual Population Survey (2021)

7.4.6 The parity between the economic activity rate within the FEMA with respect to the wider region over the past decade displays a stability and consistency within the labour market.

7.4.7 There is a high proportion of jobs within FEMA relative to the working age population (those aged 16-64) as measured by the Jobs Density Ratio depicted in **Figure 7.2**.

Figure 7.2 Jobs Density Ratio

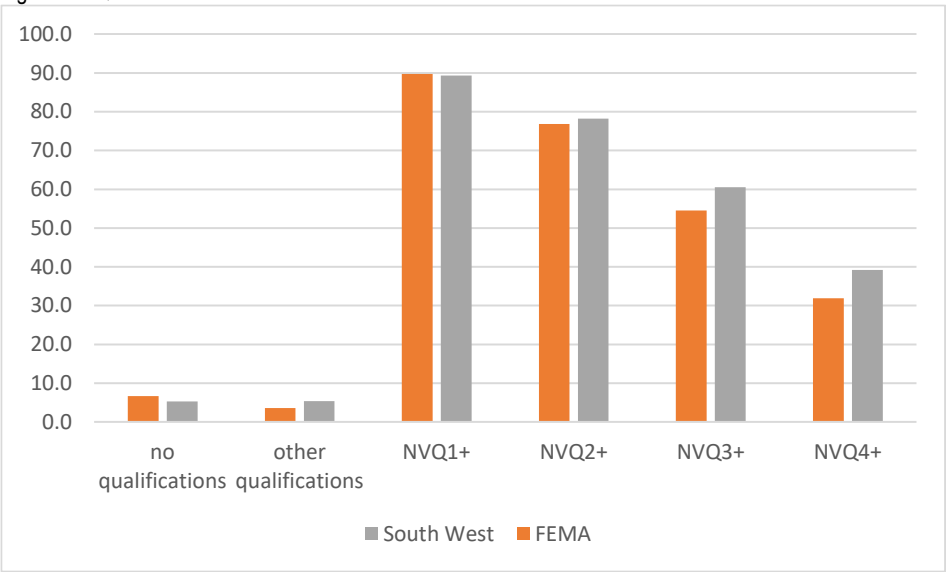


Source: Stantec Analysis of Jobs Density Data (2021)

7.4.8 The jobs density ratio is a measure of the number of jobs relative to the population of working age people (i.e., those aged 16-64). A jobs density ratio of 0.5 would mean that there is one job for every two people in the working age population. While the FEMA was marginally behind the South West region for several years the gap as closed, and the FEMA now has a jobs density of 0.91 which is on par with that measured in the South West[4]. The sub-region therefore displays similar strengths as the rest of the South West in terms of access to employment opportunities and supporting a strong labour market.

7.4.9 In general, the labour force is marginally less qualified that the population of the South West region, with the proportion of the working age population in the FEMA having attained NVQ4+ and NVQ3+ being a couple of percentage points below the regional average. Qualifications attainment within the population as of 2019 is shown in **Figure 7.3.**

Figure 7.3 Qualifications Attainment

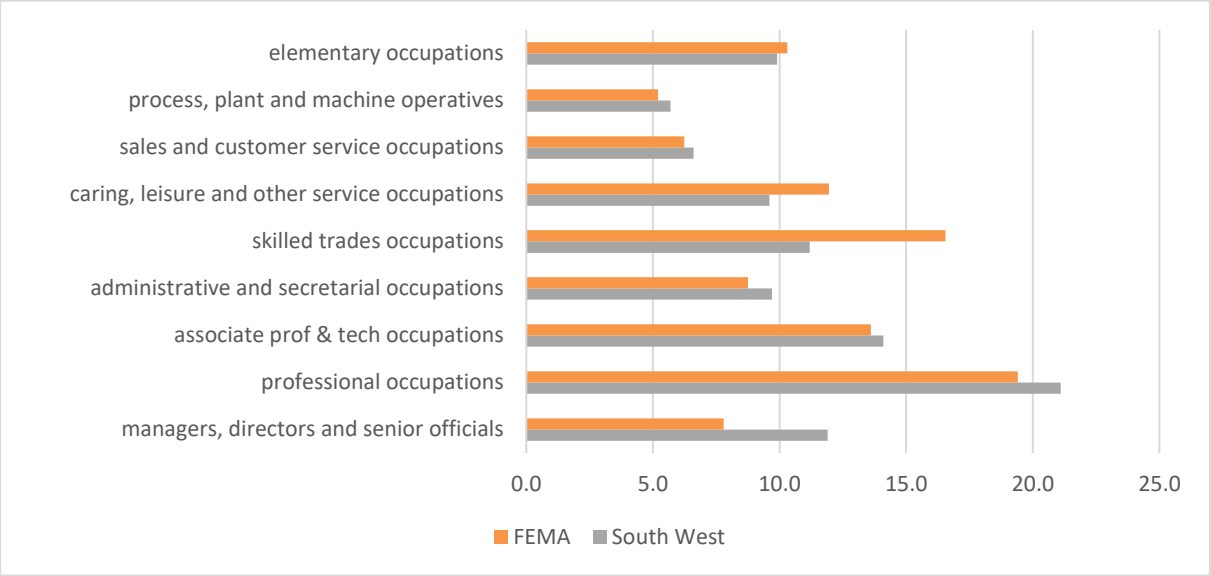


Source: Stantec analysis of Annual Population Survey (2021)

[4] Office for National Statistics Jobs Density (2019)

7.4.10 Related to the divergence in qualifications attainment, the distribution of occupations is an important factor when considering the labour market dynamics. **Figure 7.4** shows the occupation structures within the FEMA and the South West region.

Figure 7.4: Employment of Industries



7.4.11 The lower attainment rates, particularly for higher qualifications such as NVQ3 or NVQ4, likely plays a role in the FEMA labour market workers earning less in terms of gross median weekly wages (£480.1) than the regional (£531.4) or national averages (£574.8)[5].

7.4.12 The FEMA represents a small proportion of the total labour market within the South West region, accounting for just over 4% of the total jobs.

7.4.13 The largest sectors of employment within the FEMA are Human Health and Social Work (16.9%), Wholesale and Retail (16%), Manufacturing (9.3%), and Education (8.4%). This is broadly reflective of the employment distribution in the South West[6]. The full distribution of jobs across the broad industrial groups is shown in **Figure 7.5.**

[5] Office for National Statistics Annual Survey of Hours and Earnings (2019)

[6] Office for National Statistics Business Register and Employment Survey (2019)

Figure 7.5 Employment by Industries

Source: Stantec analysis of Business Register and Employment Survey data (2021)

7.4.14 The South West's Functional Economic Market Areas have overlapping geographies highlighting strong linkages across the region. The M5 Corridor is the connection between two hubs of economic activity in the South West: the South Central FEMA, containing Exeter and Plymouth, and the North East Triangle FEMA containing Bristol, Bath and Swindon.

Enterprise Zone

7.4.15 The Site is one of the largest development-ready sites in the UK[7]. Most of the Site has been designated as an Enterprise Zone which provides incentives such as business rate discounts, capital allowances, and simplified planning processes.

7.4.16 Gravity responds to national, regional and local priorities, set out in **Chapter 2**. It is envisaged that the Site will be developed to support the overarching national priorities to respond to the grand challenges of clean growth and to enable strategic responses to transport decarbonisation. The project will deliver the economic strategy outlined in the Heart of the South West Local Enterprise Partnership (HotSWLEP) Strategic Economic Plan, attracting businesses engaged in:

- Low carbon energy production
- Advanced manufacturing
- Artificial intelligence and robotics
- Electric vehicles
- Data centres
- Creative industries

7.4.17 The HotSW LEP, together with the District and County Council are partners in the enterprise zone. As such there is strong policy alignment from the national economic priorities through to the LEP, the County Climate Change Strategy and the District economic strategy. The Site has the capacity to provide over 4,000 job opportunities and contribute c. £500 million to the local economy once fully built out and occupied[8] The flexibility of a LDO has the potential to enhance the economic impact where investment decisions and delivery can be accelerated.

Housing Market

7.4.18 The Housing Market Areas and Functional Economic Market Areas in Somerset report (2015) identified Sedgemoor District Council as a single Housing Market Area, however it is important to be aware of the strong links with Taunton Deane (due to the M5 Corridor FEMA), West Somerset, and Bristol.

7.4.19 As the largest city in the South West of England, Bristol is a focal point for activity in the region. The Wider Bristol Housing Market Area (HMA) covers the whole of Bristol, North Somerset, and South Gloucestershire, together with parts of Bath and North East Somerset, Sedgemoor, and Stroud.

7.4.20 Based on the Strategic Housing Market Assessment (SHMA) work undertaken for Sedgemoor District Council in 2016, the adopted Local Plan identifies a need for a minimum delivery of

[7] Department for International Trade.

[8] Department for International Trade. Capital Investment Prospectus Sheet.

644 dwellings per annum, or 13,530 homes over the plan period to 2032[9]. The SHMA also compiled evidence of housing affordability and found that house prices and rents are below national and regional averages, and among the lowest of the Somerset authorities. Sedgemoor has a lower quartile affordability ratio[10] of 8.1 which is above the national average, but towards the lower end of the range for Somerset authorities, and the ratio has only increased modestly over the previous decade.

7.4.21 Residential uses are recognised as being an integral element of the proposed development to respond to wider housing requirements, but also to provide a choice of housing to meet the specific needs of occupiers and their workforce.Any new residents will also generate additional household spending power within the local economy.

Key Business Sectors

7.4.22 Gravity is located off M5 Junction 23 outside Bridgwater. A market-led approach is being adopted, thus providing the potential for a variety of spaces for design and build options to accommodate offices, research, and development, light industrial and leisure; storage and distribution; energy; and manufacturing and general industry. Key business sectors within the FEMA which could experience beneficial economic effects from the development include:

- **Construction** – the construction sector employs some 6,000 workers within the FEMA, equating to 5.3% of the total jobs[11]. This is fractionally below the proportion of employment in the construction sector across the South West (5.9%).

- **Energy** – some 800 people in the FEMA are employed within the electricity, gas, steam and air conditioning supply sector, representing just 0.7% of total employment[12]. This is marginally above the 0.4% employed in the same sector at the regional level. However, it is important to note that the Hinkley Point C nuclear power station is in development and is expected to be completed in 2023. This will have significant impacts on the levels of employment within the energy sector and will likely increase related supply chain activity.

- **Manufacturing** – The M5 Corridor FEMA contains some 10,500 workers in the manufacturing sector, equating to 9.3% of the total workforce[13]. The Heart of the South West Strategic Economic Plan notes manufacturing as a key growth sector. Development of aerospace and advanced manufacturing capacity has been identified as being integral components of the wider South West cluster and key to the delivery of the UK Aerospace Industrial Strategy. The Plan states that there exists a transformational opportunity to work collaboratively with neighbouring LEPs to support these industries and their supply chains, as well as to support other engineering-based areas of activity[14].

7.4.23 In the context of the construction employment in the South West it is recognised that Hinkley Point C nuclear power plant project is currently under construction in Somerset. Hinkley Point C is one of the largest construction projects in the UK, with a total cost estimate of some £23 billion, with some £3.2 billion in spend occurring in the South West region to date[15]. The initial estimates indicated a labour force requirement of some 5,000 workers, and approximately 35% of the workforce is local[16].

7.4.24 With Hinkley Point C on schedule for completion in 2026, there is an opportunity to retain a substantial portion of the construction labour force resources to aid in the delivery of Gravity.

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[9] Strategic Housing Market Assessment. 2016. Available: https://www.sedgemoor.gov.uk/shma

[10] Housing affordability ratio is the comparison of house prices to income levels.

[11] Office for National Statistics Business Register and Employment Survey (2019)

[12] Office for National Statistics Business Register and Employment Survey (2019)

[13] Office for National Statistics Business Register and Employment Survey (2019)

[14] Heart of the South West Local Enterprise Partnership Strategic Economic Plan. Available: https://heartofswlep.co.uk/wp-content/uploads/2016/09/SEP-Final-draft-31-03-14-website-1.pdf

[15] https://www.edfenergy.com/media-centre/news-releases/hinkley-point-c-smashes-regional-investment-target

[16] https://www.bbc.co.uk/news/uk-england-somerset-57227918

This will ensure continuity of high-value construction employment in the region and provide opportunities for further workforce development and training.

Approach to 2032 Baseline

7.4.25 With regard to the future baseline, current conditions, and conditions in 2032 will be identified and the effects of the LDO assessed against the 2032 baseline.

7.4.26 The future baseline is based on a 2032 scenario and incorporates the 2017 Planning Consent, but not the safeguarded uses, approved development and also considers likely trends anticipated between 2021 and 2032.

7.4.27 There is potential for changes to the current state of the environment arising out of interactions between the Proposed Development and the developments which are anticipated within the Future Baseline scenario. Potentially significant economic impacts are likely to occur in the following economic sectors:

- **Construction –** the 175,212m^2 of commercial floorspace, and the road, footpath, cycle route, and landscaping and drainage infrastructure expected to be developed within the 2032 Baseline would support temporary construction employment
- **Manufacturing** – the 43,600m^2 of manufacturing space which is anticipated under the 2032 Baseline would supporting high-value operation jobs within the local labour market
- **Transportation/Distribution** – the 99,462m^2 of transportation/distribution floorspace which is predicted under the 2032 Baseline would increase transportation/distribution and logistics activity in the region, supporting operational employment opportunities in the labour market
- **Office and R&D Space –** the 32,150m^2 of office and R&D floorspace projected within the 2032 Baseline would support a variety of operational employment opportunities
- **Retail & Hospitality –** the construction workers required to deliver the full suite of development expected within the 2032 Baseline would result in increased spending at local retail and hospitality establishments. The sector will be further supported by additional household spending linked to the delivery of new accommodation units.

7.4.28 The ES will outline the likely baseline economic conditions in 2032.

7.5 Consultation

7.5.1 High level engagement between Sedgemoor District Council and This is Gravity have aligned the strategic vision and confirmed the potential for significant economic opportunities. Engagement with the County Council and the HotSW LEP as enterprise board members has continued throughout, with the focus on Enterprise Zone deliverability. Incentives including the period for business rates relief and the provision of wider benefits to attract high value international occupiers will also be discussed.

7.5.2 In July 2020, Sedgemoor District Council approved the preparation of a Local Development Order (LDO) for Gravity. The development of a simplified planning regime for potential investors and occupiers of the Gravity site will support the ambition to create a smart campus which attracts international investment and creates new opportunities for communities.

7.5.3 Based on the Scoping Opinion issued in response to this Scoping Report, additional consultation will be undertaken as necessary with Sedgemoor District Council and other appropriate key stakeholders[17].

7.6 Potential Effects

7.6.1 All new developments have the potential to generate economic effects at the local, regional and/or national level, principally in relation to changes in economic development, employment, area regeneration, community infrastructure provision and usage, retail expenditure and public access to recreational assets. However, the range of likely significant economic effects generated by a development proposal depends upon the characteristics of the individual development combined with the baseline socio-economic conditions (e.g., labour and housing markets) which the development would be introduced to.

7.6.2 Having regard to the understood development parameters and the characteristics of the site at this early stage it is considered that the following economic effects are likely to be significant and therefore require further consideration in the EIA process.

Construction

- Direct, indirect, and induced labour market impacts resulting from the capital expenditure required to deliver the full complement of infrastructure and development predicted within the Future Baseline scenario
- Direct and indirect effects on recreation and public access through restrictions to the public in and around development sites

Operation

- Direct, indirect, and induced labour market effects resulting from the employment supported by the by the Proposed Development and other commercial development floorspace assumed within the Future Baseline scenario
- Labour market effects resulting from supply chain impacts stimulated by the proposed development
- Housing market effects
- Indirect retail expenditure impacts relating from new residents and new employees within the 2032 Baseline.

7.6.3 Having regard to the understood parameters of development and key baseline characteristics, at this stage it is considered that there is currently no or very limited potential for significant effects on tourism receptors to result from the construction or operation of the proposed development. On this basis, any effects from the proposed development on tourism can be scoped out of requiring further assessment.

7.6.4 The assessment will be focused on the temporal and spatial scales at which there is the potential for likely significant effects to occur from the Proposed Development. An appropriate Study Area corresponding to local authority administrative boundaries, census geography and built-up area sub-divisions maintained by the UK Government will be adopted to ensure accurate use of data.

7.6.5 The assessment will draw upon relevant conclusions from other technical assessment chapters of the ES, in particular regarding likely ‘primary’ physical effects arising from changes

[17] This may include Bridgwater Chamber of Commerce and business associations representing specific industry interests. However, this is not an exhaustive or prescriptive list as the stakeholders actually consulted in the preparation of the assessment will need to be confirmed after a Scoping Opinion is issued.

in traffic, which may lead to secondary economic effects. To avoid duplication and maintain assessment proportionality, amenity and health related environmental effects on local residents are proposed to be scoped out of the economic assessment chapter as any likely significant effects will be assessed within the Health, Social and Wellbeing chapter of the ES where relevant.

7.7 Assessment Methodology

Overview of approach

7.7.1 There are no specific methodological guidelines or requirements for economic assessments with the context of EIA. However, the assessment of the likely significant economic effects associated with the proposed development will be undertaken in accordance with HM Treasury Green Book appraisal guidance.

7.7.2 The following activities will be undertaken to complete the economic assessment:

- Reviewing relevant legislation and planning policies
- Establishing baseline conditions with the relevant Study Areas to identify potential receptors and receptor groupings for consideration in the assessment, including the identification of likely changes between to the current state of the environment to 2032
- Defining receptor sensitivity to likely changes resulting from the proposed development
- Examining likely economic changes from the proposed development on identified receptors and receptor groupings, with consideration given to phasing, magnitude, duration, and nature of the change
- Considering likely cumulative economic changes from the proposed development in combination with the wider development context (noting cumulative is included in the 2032 baseline).
- Determining the likely level of economic effects, including cumulative effects, from the proposed development, having regard to both receptor sensitivity and the characteristics of predicted changes
- Identifying the significance of likely economic effects in the context of the assessment criteria
- Identifying mitigation measures to address any likely significant adverse economic effects,
- Identifying likely residual economic side effect from the proposed development taking account of all mitigation measures

7.7.3 The level and significance of likely economic effects from the proposed development will be judged with reference to the following factors:

- Sensitivity of affected receptor (e.g., construction sector, manufacturing sector, energy sector, retail & hospitality sectors)
- Predicted magnitude of change

7.7.4 Definitions of receptor sensitivity will be confirmed with the methodology section of the economics chapter of the ES. Definitions of receptor sensitivity will be confirmed in the methodology section of the Socio-economics chapter of the ES. In overall terms, the sensitivity of the labour market (FEMA) will be defined in relation to:

- The availability of skilled labour relative to national averages;
- The proportion of employment in relevant sectors (e.g., construction);
- The availability of labour (including the unemployed); and,
- Relevant education and training provision.

7.7.5 Plentiful labour and/or skills capacity results in a low sensitivity, whilst limited labour and/or skills capacity results in a high sensitivity. Sensitivity criteria which will be applied to the labour market considered in this assessment are detailed in **Table 7.1** below.

Table 7.1 Labour Market sensitivity criteria

Sensitivity	Example
High	There is a shortfall of appropriate labour and skills. The proposed development would therefore lead to labour market pressure and distortions (i.e., skills and capacity shortages, import of labour, wage inflation).
Medium	There is a low/limited supply of appropriate labour and skills. The proposed development may therefore lead to labour market pressure or distortions.
Low	The is a readily available supply of appropriate labour and skills. The proposed development is therefore unlikely to lead to labour market pressure or distortions.

7.7.6 Consistent definitions of magnitude of change across different types of economic effects (employment) access are provided in **Table 7.2.**

Table 7.2 Magnitude of Change Criteria

Magnitude of Change	Type of Change	Criteria
High	Adverse	**Employment changes**: the number of jobs lost in the Study Area would be 250 or greater (based upon the EU definition of small and medium enterprises (European Commission, 2003)).
	Beneficial	**Employment changes**: the number of jobs created in the Study Area would be 250 or greater.
Medium	Adverse	**Employment changes**: the number of jobs lost in the Study Area would be 50 or greater, but fewer than 250.
	Beneficial	**Employment changes**: the number of jobs created in the Study Area would be 50 or greater, but fewer than 250.
Low	Adverse	**Employment changes**: the number of jobs lost in the Study Area would be greater than 10, but fewer than 50.
	Beneficial	**Employment changes**: the number of jobs created in the Study Area would be greater than 10, but fewer than 50.
Negligible	Adverse	**Employment changes**: the number of jobs lost in the Study Area would be less than 10.
	Beneficial	**Employment changes**: the number of jobs gained in the Study Area would be less than 10.
No Change		No change would be perceptible, either beneficial or adverse.

7.7.7 In line with standard EIA practice, a matrix-based approach will be adopted to consider the sensitivity of identified receptors in tandem with the likely magnitude of change from the proposed development. This method allows the level and significance in EIA terms of all predicted economic effects to be determined. The EIA significance matrix to be adopted in this assessment is detailed in **Table 7.3** below.

7.7.8 Where appropriate, magnitude of change levels will be fixed to relevant quantitative thresholds. In particular, net employment change will be calculated based on the gross employment potential of the proposed development and adjusted by additionality factors:

- **Deadweight** – the level of economic activity which would have taken place in absence of the proposed development
- **Leakage** – the proportion of new employment opportunities taken up by people living outside of the study area
- **Displacement** – the proportion of new employment created as a result of reduced employment elsewhere in the Study Area
- **Multiplier** – a scalar value used to estimate the indirect and induced employment generated by the effects of the direct employment on the supply chain

Table 7.3 Significance Matrix of Socio-Economic Effects

Sensitivity	Magnitude of change			
	High	Medium	Low	Negligible
High	Substantial/Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Minor/Negligible	Negligible

7.7.9 Following the identification of likely economic effects, the need for further mitigation measures to address the predicted adverse effects will be considered.

7.7.10 The assessment will conclude by reporting the level and significance of likely residual economic effects from the proposed development, taking account of all proposed mitigation measures, and considering the requirement for monitoring.

Information Sources, Consultation and Modelling

7.7.11 A detailed economic baseline of the relevant Study Areas will be collated to establish the sensitivity of identified receptors. The following key data sources will be reviewed:

- Office for National Statistics (ONS) datasets including:
  - Annual Population Survey (APS),
  - Business Register and Employment Survey (BRES),
  - Annual Survey of Hours and Earnings (ASHE),
  - mid-year population estimates,
  - UK Business Counts,
  - Annual Business Statistics.

7.8 Limitations and Assumptions

7.8.1 There could be circumstances where information required to undertake the assessment as stated in this ES Scoping Report is not available, or the quality of the information is poor. In such instances the latest publicly available information will be used in the assessment, with any gaps in the data clearly identified and noted.

Covid-19

7.8.2 The effects of the COVID-19 pandemic on a range of economic data and indicators are not yet fully understood. Consequently, data from 2019 has been used within the analysis as it represents the most recent figures captured under ‘normal’ economic conditions. As a result, there will be some flexibility regarding projected values due to the uncertainty around the continuation of observed economic trends as the economic recovery from the pandemic progresses.

7.9 References

Office for National Statistics Annual Population Survey (2019)

Office for National Statistics Annual Survey of Hours and Earnings (2019)

Office for National Statistics Business Register and Employment Survey (2019)

Office for National Statistics Jobs Density (2019)

Heart of the South West Local Enterprise Partnership Strategic Economic Plan. Available: https://heartofswlep.co.uk/wp-content/uploads/2016/09/SEP-Final-draft-31-03-14-website-1.pdf

Strategic Housing Market Assessment. 2016. Available: https://www.sedgemoor.gov.uk/shma

8 Health, Social and Wellbeing Impacts

8.1 Introduction

8.1.1 This chapter sets out the proposed approach to assessment of the beneficial and adverse effects of the Proposed Development on health, wellbeing, and social outcomes (including social infrastructure). This section of the scoping report has been prepared by Stantec.

8.1.2 The EIA Regulations require identification of likely significant effects of development on population and human health. In addition to this, Policy D28: Health and Social Care of the SDC Local Plan 2011-2032 also identifies that Health Impact Assessments may be requested to support major planning applications. SDCs Local Plan also identifies a number of policies setting out criteria relating to social aspects, including policies for housing, education, healthcare, community facilities, open space, and sport facilities.

8.1.3 The established definition of health from the World Health Organisation (WHO) is that *"health is a state of complete physical, social and mental wellbeing and not simply the absence of disease or infirmity"*.

8.1.4 The definition of health reflects the understanding that an individual's inherited traits interact with lifestyle, community, environmental, social and economic factors as well as a much wider range of issues to determine their health outcomes. Many of these 'determinants' can be influenced by the quality of people's living and working environments and are therefore relevant to the design and location of development, such as that proposed.

8.1.5 Therefore, it is considered that in establishing the effects of the proposed development on health and wellbeing, the wider determinants of health should be considered including impacts on social infrastructure.

8.2 Work Completed to Date

8.2.1 A specific a chapter on human health and wellbeing was not prepared as part of the 2013 ES and subsequent 2017 ES Addendum for Huntspill Energy Park, however direct impacts on human health were considered in the ES in relation to air quality, contamination and noise and vibration. In addition to this, a socio-economics Chapter was included in the 2013 ES and 2017 ES Addendum. These assessments provided an analysis of baseline socio-economics data (such as economic performance, employment, and deprivation) and an assessment of the scheme to deliver local economic development policy and its potential impacts on employment, population, and local economic performance.

8.2.2 The Gravity Clean and Inclusive Growth Strategy has been prepared to demonstrate how the Campus will aim to deliver a clean and inclusive model for an evolving community and aligning to the UN Sustainable Development Goals (UNSDG) through development of Environmental and Social Governance (ESG) practices. This Strategy considers wellbeing and inclusivity, including good health and wellbeing, gender equality and decent work and economic growth. Measures from the Clean and Inclusive Growth Strategy that will be incorporated into the Proposed Development that will mitigate impacts in relation to health, wellbeing and social infrastructure will be assessed within this chapter.

8.3 Baseline Conditions

Health and Wellbeing

8.3.1 The Site is located within the local authority area of SDC and within the jurisdiction of the Somerset County Council Clinical Commissioning Group (CCG).

8.3.2 The Somerset Health and Wellbeing Board is responsible for preparing Joint Strategic Needs Assessments (JSNAs) for the area. JSNA identify the current and future health and social care

needs of the local community and are a fundamental part of planning and commissioning (buying) services at a local level.

8.3.3 The Improving Lives Strategy 2019-2028[18] is prepared by the Somerset Health and Wellbeing Board and outlines four strategic priorities for improving health and wellbeing over the ten-year period. These priorities are:

- A county infrastructure that drives productivity, supports economic prosperity and sustainable public services;
- Safe, vibrant and well-balanced communities able to enjoy and benefit from the natural environment
- Fairer life chances and opportunity for all; and
- Improved health and wellbeing and more people living healthy and independent lives for longer.

8.3.4 Over the ten-year period of the strategy the expected outcomes for health and wellbeing are to increase healthy life expectancy and reduced inequality in life expectancy and healthy life expectancy between communities.

8.3.5 SDC also have a local health and wellbeing strategy[19] which is underpinned by six themes:

- Planning for Sustainable Communities;
- Healthy Housing;
- Economic Independence;
- Healthy Body and Mind;
- Safer Communities; and
- Safer Individuals.

8.3.6 The Site is located predominantly within the ward of Puriton and Woolavington (a geographic subdivision of the local authority area), however the boundary of the site also extends beyond this ward to the north into the neighbouring ward of Knoll. Wards can be further divided into smaller geographical units called Lower Super Output Areas (LSOA). The Site is located within the LSOAs of Sedgemoor 006B, 006C and 006D.

8.3.7 The Local Authority Health Profile 2019 for Sedgemoor[20] (provided in **Appendix K**) identifies that generally the area performs similarly to or significantly better than the England average with respect to most indictors. The exceptions to this are in relation to:

- Suicide rate;
- Emergency hospital admissions for intentional self-harm;
- Hospital admission rate for alcohol-specific conditions;

[18] Somerset Health and Wellbeing Board, Improving Lives Strategy 2019-2028. Available [Online] at: http://www.somersetintelligence.org.uk/jsna/ [Accessed 01/02/21].

[19] Sedgemoor District Council, Health & Wellbeing Strategy for Sedgemoor 2016 – 2020. Available [Online] at: https://www.sedgemoor.gov.uk/healthyliving

[20] Public Health England (2019) Sedgemoor Local Authority Health Profile. Available [Online] at: https://fingertips.phe.org.uk/profile/health-profiles

- Percentage of adults classified as overweight or obese;
- Average GCSE attainment.

8.3.8 At a more local level, the wards[21,22] within which the site is located perform similarly to or significantly better than the England average for almost all health indicators. The exception to this is in relation to the percentage of people living with long term illnesses or disability within the ward of Puriton and Woolavington.

8.3.9 In relation to deprivation, Somerset has been identified as generally performing better than the national average in terms of overall levels of deprivation. However, since 2015 the number of 'highly deprived' neighbourhoods in Somerset (categorised as being within the 20% most deprived in England) increased to 29 in Index of Multiple Deprivation (IMD) 2019, up from 25 at the time of IMD 2015[23].

8.3.10 The majority of the site is located within LSOA Sedgemoor 006C which is identified as being within the 8th IMD decile (with 1 being the most deprived and 10 being the least deprived). Other parts of the site are located within the LSOAs of Sedgemoor 006B and 006D which are identified as being with the 4th decile. LSOAs to the north, south and west of the Site similarly sit towards the middle decile and lower end of the rankings with areas of particularly high deprivation being located within urban areas such as Bridgwater and Highbridge.[24]

8.3.11 In summary, it is considered that the area within which the site itself is located is not particularly deprived or has prominent health issues but at a council level and in terms of the wider area surrounding the site there are prominent issues, particularly relating to deprivation, mental health and wellbeing, education, and obesity.

Social Infrastructure

8.3.12 For primary and secondary school places, GPs and strategic sport facilities/playing pitches, the 2032 baseline assessment will include:

- Existing conditions of existing availability of primary and secondary school places, GPs, and strategic sport facilities/playing pitches;
- Understand the future build programme for extended and new community facilities;
- Future demand for primary and secondary school places, GPs, and strategic sport facilities/playing pitches for the Proposed Development;
- Future demand for primary and secondary school places, GPs, and strategic sport facilities/playing pitches, for identified permitted/pending residential planning applications and residential allocations in the Local Plan, in the villages of Puriton and Woolavington.

[21] Public Health England (2019) *Local Health Profile, Puriton and Woolavington*. Available [Online] at: https://fingertips.phe.org.uk/profile/local-health

[22] Public Health England (2019) *Local Health Profile, Knoll*. Available [Online] at: https://fingertips.phe.org.uk/profile/local-health

[23] Somerset County Council, English Indices of Deprivation 2019 Somerset Summary. Available [Online] at: http://www.somersetintelligence.org.uk/imd/

[24] Office for National Statistics (2019) *English indices of deprivation 2019.* Available [Online] at: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019

8.3.13 The National Planning Policy Framework (2019)[25] describes the purpose of the planning system as contributing to sustainable development. Sustainable development should be underpinned by the three overarching objectives, including:

- **A social objective** – to support strong, vibrant, and healthy communities, by ensuring that a sufficient number a range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being.

8.3.14 The Government's objective for housing is to significantly boost the supply of homes as set out in Paragraph 59. It goes on to say 'it is important that a sufficient amount and variety of land can come forward where it is needed.

8.3.15 Paragraph 92 promotes that planning decisions should 'ensure an integrated approach to considering the location of housing, economic uses and community facilities and services.' This promotes sustainable development by providing different types of development close to each other and reducing the need to travel to essential community facilities and jobs.

8.3.16 Sedgemoor Local Plan (2019)[26] sets out social policies, up to 2032:

- Site allocations for community facilities, such as school sites;
- Site allocations for residential development in the villages of Puriton and Woolavington;
- Provision of healthcare facilities, open space, playing pitches and other public open space types. Some of these policies also provide thresholds for provision of facilities, either to be provided on-site or through financial contributions;
- Housing, including housing mix and affordable housing percentage / tenures.

8.3.17 SDC has a number of relevant Supplementary Planning Documents, providing information on social conditions – some of which include thresholds and support Local Plan policies relating to community facilities:

- Strategic Housing Market Assessment (2016)[27] – housing mix and affordable housing;
- Planning Guidance on Space for Sport and Play (2007)[28];
- Draft Playing Pitch Strategy.

8.3.18 The Sedgemoor Infrastructure Delivery Strategy (IDS) (2017)[29] provides an assessment of the education, green infrastructure, outdoor sport and recreation and wider infrastructure needs (including healthcare, community and cultural) that has been identified by SDC to support planning development and growth in the Local Plan: There have been a number of projects completed since the adoption of the previous Core Strategy:

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[25] DCG (2019) *National Planning Policy Framework 2019.* Available [Online] at: National Planning Policy Framework - Guidance - GOV.UK (www.gov.uk)

[26] Sedgemoor District Council (2019) *Sedgemoor Local Plan.* Available [Online] at: Adopted Local Plan (2011-2032) (sedgemoor.gov.uk)

[27] Sedgemoor District Council (2016) *Strategic Housing Market Assessment.* Available [Online] at: Strategic Housing Market Assessment (sedgemoor.gov.uk)

[28] Sedgemoor District Council (2007) *Planning Guidance on Space for Sport and Play.* Available [Online] at: Planning Guidance on Space for Sport and Play (sedgemoor.gov.uk)

[29] Sedgemoor District Council (2017) *Sedgemoor Infrastructure Delivery Strategy.* Available [Online] at: Infrastructure Delivery Strategy (sedgemoor.gov.uk)

- New educational facilities have been delivered including early years, primary, secondary and specialist school facilities across the District as well as the Construction Skills Centre, Energy Skills Centre and Theatre and Performing Arts Centre (McMillan Theatre) at Bridgwater and Taunton College. In addition to this there has been the extension/expansion/redevelopment of existing facilities for a number of early years, primary, secondary and specialist school facilities across the District. The southern arm of the National College for Nuclear is on schedule to open at the Cannington Campus of the Bridgwater and Taunton College in late 2017.

- New and enhanced green infrastructure, outdoor sport and recreation space has been delivered across the district including for example: the completion of the Steart Peninsula scheme, North Petherton Playing Fields; Westfield United Reform Church; Cannington Village Hall; Bridgwater College Campus Sports Facilities; Eastover Tennis Courts; Bridgwater College Academy; Chilton Trinity Technology College Sports Centre and Pool; sports centre at Robert Blake School; recreation area at North East Bridgwater; and skate parks at Bridgwater YMCA and in Burnham.

8.3.19 The IDS identifies future demand / delivery for education provision:

- Further investment in education will be required to meet demand associated with growth in Sedgemoor. The residual requirement (2015 – 2032) indicates that development could generate demand across all levels of education provision – up to 978 Early Years Places, 1370 primary school places and 1130 secondary school places.

- In terms of delivery, four school projects have been consented and have funding for delivery: Northgate (primary), Salmon Parade former hospital site (early years), the expansion of Hamp Junior School and Phase 2 of Willowdown Primary School.

- The Submission Version of the Local Plan allocates various areas of land for education and the expansion of existing schools. New primary schools have been allocated at the West Bridgwater and East Bridgwater strategic sites, to be funded by the developers. At West Bridgwater, the potential for a replacement secondary school is cited.

8.3.20 The IDS identifies future demand / delivery of parks, open spaces, sports, and recreation facilities:

- Calculations for demand and costs of sport and recreation facilities directly related to the residual requirement of development (2015 – 2032) indicates demand for a new swimming pool, sports hall, playing pitches, outdoor sports, play space as well as informal and formal open space.

- On-site green infrastructure will continue to be provided by developers in accordance with Policies D32 (Protection and Enhancement of Existing Green Infrastructure Resources) and D33 (Green Infrastructure Requirement in New Development) of the Local Plan.

- Section 106 (s.106) Agreements will continue to be used as the mechanism to deliver on-site provision of outdoor playing space and on-site outdoor sport and recreation facilities. Where provision cannot be provided on-site, off-site green infrastructure will be delivered through CIL in accordance with the Accessible Natural Greenspace Standard (ANGSt) and the Fields in Trust ‘Six Acre Standard’.

8.3.21 The IDS identifies improvements and capacity issues relating to healthcare facilities:

- There is demand for improvements to and increased capacity of healthcare provision across Sedgemoor.

- For the strategic allocations in the Local Plan, the HIA would allow the views of the local Clinical Commissioning Group and NHS England to be sought regarding the impact of new development on health infrastructure and/or the demand for healthcare services.

- Where a proposed development has a particular impact on the provision of healthcare, s.106 Agreements will continue to be the appropriate mechanism to fill any identified healthcare need or funding gap.

8.3.22 The IDS identifies improvements and capacity issues relating to community facilities:

8.3.23 There is also demand for improvements to and increased capacity of community centres and libraries across Sedgemoor.

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8.4 Consultation

8.4.1 No specific consultation on the scope of the health, wellbeing and social impacts ES Chapter has been undertaken to date, however wider consultation has been undertaken with SDC and will continue with Somerset County Council, including in relation to the strategic design code which gives consideration to wider health related impacts such as transport and open space/ recreation.

8.4.2 The assessment on social infrastructure will involve, where necessary, discussions with relevant organisations, including SDC, Somerset County Council, service providers and community groups. The discussions with service providers, such as the local health, education, and leisure facility providers, will aim to understand the build programme for social facility expansions and new build projects in the local area and make sure that the social benefits of the development are maximised and adverse effects on the community are mitigated.

8.4.3 Further commentary from the community is expected on social infrastructure from the consultation events.

8.5 Potential Significant Effects

8.5.1 The NHS London Healthy Urban Development Unit, 'HUDU Planning for Health: Healthy Urban Planning Checklist (2017)[30], provides a useful framework of health determinants for assessment of urban development projects. The framework includes consideration of potential construction and operational effects of development. The assessment framework, including themes and planning issues, is outlined in **Table 8.1** below.

8.5.2 By assessing the Proposed Development against these themes, it is possible to identify the beneficial or adverse health, wellbeing, and social effects of the Proposed Development on the sensitive receptors and provide a basis for setting actions for further mitigation and enhancement.

8.5.3 The HUDU framework includes consideration of impacts on social infrastructure and employment, including housing, open space, community facilities and job creation.

8.5.4 The development will include a provision of new housing (including affordable housing) for the local area, and new amenities and facilities. The needs of residents moving into the scheme will need to be met through social and community infrastructure provision, while the development may also provide new facilities and amenities for the local community. The study will therefore assess how the increase in population of residents is likely to impact on specific local service/facilities (such as schools, primary health facilities and open space) and state how these impacts may be offset (or enhanced), through development on- or off-site.

8.5.5 The effects of the proposed employment floorspace will be assessed in terms of likely job creation in the Economic ES chapter. However, it should be noted that this will have a social

[30] NHS London Healthy Urban Development Unit (2017*) HUDU Planning for Health: Healthy Urban Planning Checklist.* Available [Online] at: *https://www.healthyurbandevelopment.nhs.uk/hudu-publications-2017/*

impact in terms of creation of jobs at both construction and operational stages which will be considered in this ES Chapter.

Demolition and Construction

8.5.6 An assessment of construction effects on the following HUDU health themes (see **Table 8.1** for further info) will be undertaken:

- Active Travel;
- Healthy Environment; and
- Vibrant neighbourhoods (including employment impacts).

Operation

8.5.7 An assessment of operational effects on the following HUDU health themes (see **Table 8.1** for further info) will be undertaken:

- Healthy Housing (including affordable housing and mix of homes);
- Active Travel;
- Healthy Environment; and
- Vibrant neighbourhoods (including employment, provision of schools, health care, open space, and community facilities);

8.6 Not Significant Effects

8.6.1 Certain health, wellbeing and social effects will not be relevant to certain phases of the development (e.g., housing affordability during construction) and therefore effects have been scoped out of the ES as there is not anticipated to be potential for likely significant effects to occur. The proposed health themes and planning issues to be 'scoped out' of the assessment are outlined in **Table 8.1** below.

8.7 Assessment Methodology

Overarching Methodology

8.7.1 The assessment will use a systematic approach to identifying the differential impacts of the proposed development on determinants of health and wellbeing, both positive and negative. It will also look at how different groups are likely to be affected in different ways, and therefore how health and social inequalities might be reduced or widened by the proposed development, with a particular focus on vulnerable groups that may be inequitably affected by the development.

8.7.2 Effects will be considered as appropriate at construction, and occupation, giving consideration to the likely environmental effects of the phasing of the proposed development.

8.7.3 The intention of the health, wellbeing and social impact assessment is to:

- Inform the design team to see that, health, wellbeing, and social infrastructure considerations are embedded in the design of the development;
- Make further recommendations on how further benefits could be secured through the more detailed stages of design and implementation of the proposed development; and

- Reporting that will be used to demonstrate the development response to creating a place that can support health and wellbeing (including through the provision of social infrastructure) and identification of potential impacts.

Baseline

8.7.4 The existing conditions for the assessment will build on the overview of health and social characteristics presented in **Section 8.3** above and include both local health and community profile and local health and social priorities that will be identified through:

- A review of local policies and strategies of relevance e.g., the Joint Strategic Needs Assessment, Open Space Strategy and specific strategies developed for the proposed development;
- Review of local health and community facility data e.g., Public Health England health profiles, current GP/school/leisure/sport capacity;
- Review of relevant conditions established through the other assessments within the EIA e.g., labour market statistics and number of jobs/apprenticeships generated to be identified in the economics assessment;
- Consultation undertaken as part of the preparation of the LDO will be used to inform the assessment. Consultation specifically for this assessment will be undertaken with council officers to understand the local community facility capacity, for schools, GP surgeries and leisure/sport facilities and build programme for extended or new community facilities in the local area.

8.7.5 The data will include the number of households and identified housing need based on local authority information. It will also involve an audit of community infrastructure provision and capacity.

8.7.6 The existing conditions will set out the current and planned provision of community facilities and social infrastructure, and identify factors including capacity, access and quality of facilities including primary and secondary schools, primary health services (i.e., GPs), and open space.

8.7.7 For schools, GP surgeries and leisure facilities, the 2032 baseline will include an assessment, as set out in **para 9.3.12 above**.

8.7.8 A current state of the demographic profile of Sedgemoor will be developed within the ES chapter. This will be developed in partnership with the Economic Chapter, to ensure the same data is used across all chapters. Existing information on the social conditions of the area will be collated from a variety of sources, including:

- National Census and other Office of National Statistics (ONS)-produced sources;
- Annual Population Survey;
- Travel to Work Data;
- Indices of Multiple Deprivation;
- NHS Statistics; and
- Edubase Department for Education.

8.7.9 Informed by the Economic ES Chapter, the current conditions will refer to Economic data, including the characteristics of the local economy and workforce, including economic activity, unemployment rates, skills, and qualifications. It will also assess the characteristics of the existing population, including age, household composition, deprivation, health status and local crime rates.

Receptors

8.7.10 Receptor groups considered within the assessment are part dependent upon those identified by other disciplines (such as air quality, noise, transport, and economics) who may be adversely affected or benefitted by the proposed development in terms of health and social infrastructure.

8.7.11 A review of existing conditions has identified the following groups as sensitive receptors in relation to health, wellbeing, and social impacts:

- Existing residents surrounding the site, primarily within the wards of Puriton and Woolavington and Knoll;
- Existing residents in the wider area of Sedgemoor were identified as applicable in other ES Chapters (e.g., economics and transport);
- New residents of the Proposed Development;
- New community service users (including users of social infrastructure) likely to use facilities in the Proposed Development;
- New employees working at the Proposed Development; and
- Construction workers during the construction of the Proposed Development.

8.7.12 Within these receptor groups, vulnerable groups include:

- Older people (65 and over);
- Children (0-17);
- Those with a high level of deprivation, low income, or unemployment;
- Those with pre-existing health conditions, such as obesity or mental health issues;
- New parents or pregnant women; and
- Vulnerable road users, including pedestrians and cyclists.

8.7.13 Should further receptors and vulnerable groups be identified as part of any additional information gathered, these will be included in the ES Chapter as appropriate.

Health Determinants

8.7.14 As part of the basis for the assessment we recognise that health and wellbeing can be affected by multiple determinants as indicated in **Figure 8.1.** This includes social determinants (such as access to job opportunities and education).

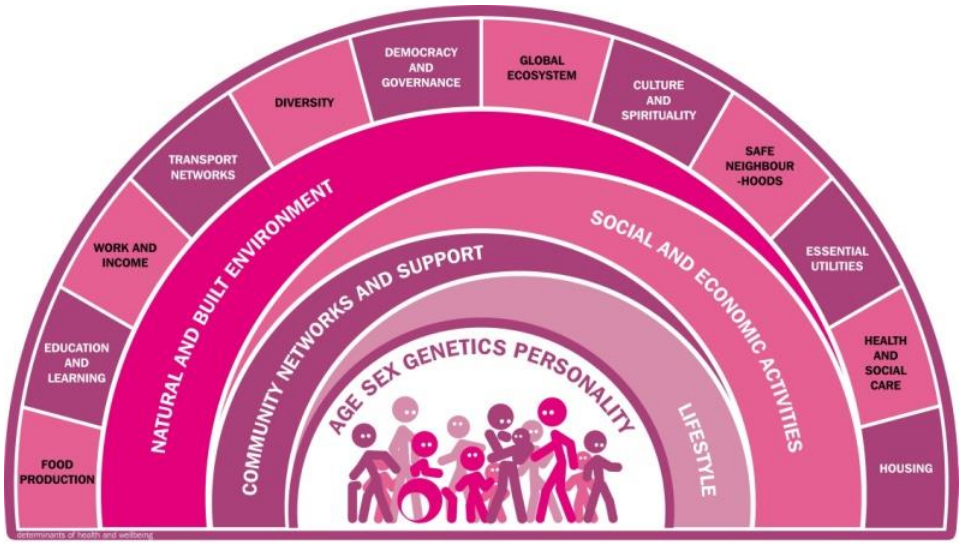

Figure 8.1**:** The Determinants of Health and Wellbeing (Stantec (Adapted from Dahlgren G and Whitehead (1991). Policies and strategies to promote social equity in health; Institute of Future Studies; Stockholm)

8.7.15 The assessment will be undertaken against determinants of health (or health issues/ objectives) including social determinants. The determinants considered are presented within the structure from the London Healthy Urban Planning Checklist (2017)[30] checklist (see **Table 8.1**) and are based on national and local policy and guidance strategies.

8.7.16 **Table 8.1** indicates the determinants of health that have been considered in this assessment and the associated pathways to specific health outcomes based upon themes in the HUDU planning checklist. Certain issues have been scoped out (e.g., housing standards during construction) where not considered applicable. These are noted in **Table 8.1** below

Table 8.1: HUDU Checklist – Assessment Framework

Theme	Planning Issue	Health and Wellbeing Issue	Scoping Considerations - Construction	Scoping Considerations – Operation
Healthy Housing	▪ Housing design ▪ Accessible housing ▪ Healthy living ▪ Housing mix and affordability	▪ Lack of living space - overcrowding ▪ Unhealthy living environment – daylight, ventilation, noise ▪ Excess deaths due to cold / overheating ▪ Injuries in the home ▪ Mental illness from social isolation and fear of crime	▪ Healthy Housing Theme scoped out of construction assessment.	▪ None Identified
Active Travel	▪ Promote walking and cycling ▪ Safety ▪ Connectivity ▪ Minimising car use	▪ Physical inactivity, cardiovascular disease and obesity ▪ Road and traffic injuries ▪ Mental illness from social isolation ▪ Noise and air pollution from traffic	▪ Promotion of walking and cycling and minimising car use planning issues have been scoped out of the construction assessment.	▪ None identified.
Healthy Environment	▪ Construction ▪ Air quality ▪ Noise ▪ Contaminated land ▪ Open space ▪ Play space ▪ Biodiversity	▪ Disturbance and stress caused by construction activity ▪ Poor air quality - lung and heart disease ▪ Disturbance from noisy activities and uses ▪ Health risks from toxicity of contaminated land	▪ Local food growing has been scoped out of the construction assessment. ▪ Overheating has been scoped out of the construction assessment ▪ Biodiversity will be considered more broadly as ‘access to nature’. Access to play space and open space will be considered together along with physical	▪ Biodiversity will be considered more broadly as ‘access to nature’. Play space and open space will be considered together along with physical recreation. It is considered that assessment against these issues, more accurately reflects potential health issues. ▪ Overheating has not been explicitly considered as this is a detailed

Theme	Planning Issue	Health and Wellbeing Issue	Scoping Considerations - Construction	Scoping Considerations – Operation
	▪ Local food growing ▪ Flood risk ▪ Overheating	▪ Physical inactivity, cardiovascular disease and obesity ▪ Mental health benefits from access to nature and green space and water ▪ Opportunities for food growing – active lifestyles, healthy diet and tackling food poverty ▪ Excess summer deaths due to overheating	recreation (e.g., impact on public rights of way). It is considered that assessment against these issues, more accurately reflects potential health issues.	design issue. However, orientation and landscaping should consider this issue as the design progresses.
Vibrant Neighbourhoods	▪ Healthcare services ▪ Education ▪ Access to social infrastructure ▪ Local employment and healthy workplaces ▪ Access to local food shops ▪ Public buildings and spaces	▪ Access to services and health inequalities ▪ Mental illness and poor self-esteem associated with unemployment and poverty ▪ Limited access to healthy food linked to obesity and related diseases ▪ Poor environment leading to physical inactivity ▪ Ill health exacerbated through isolation, lack of social contact and fear of crime	▪ Health Services, Education and Access to Social Infrastructure, Access to local food shops and public buildings and spaces has been scoped out of the construction assessment.	▪ Healthy workspaces have not been considered given there is limited information available regarding what the workspaces will be. However, workspace standards should be considered as the design progresses. ▪ Access to local food shops is considered together within access to social infrastructure. ▪ Public buildings and spaces are considered within social infrastructure.

Assessment & Reporting

8.7.17 The assessment will set out the methodology, existing conditions, and assessment (including mitigation). It will outline existing community facility and open space capacity, health characteristics, local priorities for health, the distribution of vulnerable groups and any enhancement measures identified that will help to secure social and/or health benefits as the design progresses.

8.7.18 A matrix format will be used that will assess the development against the planning issues identified in the Healthy Urban Planning Checklist (2017)30 (see **Table 8.1**). As outlined in this table there are a number of social considerations, including social infrastructure (such as access to health care and education) and employment opportunities. As part of the assessment the development will be assessed against the provision and capacity of existing facilities in the local area, as well as how the development impacts other social aspects. The assessment will clearly identify the receptors affected and whether any specific vulnerable groups are likely to be affected.

8.7.19 In terms of defining the 'significance' of an effect, there is an absence of significance criteria or a defined threshold for determining significance for population and health in UK EIA practice[31]. The International Association for Impact Assessment (IAIA) 'Human health: ensuring a high level of protection'[32] states that '*A range of criteria is used to reach a conclusion on the significance of health effects. The criteria include, but are not limited to, the sensitivity of the population and the magnitude of the effect*'. This guidance document outlines a three-step process for determining significance for health characterising criteria relevant to sensitivity, magnitude and contextual considerations (e.g., scientific literature, existing conditions and health priorities for the area).

8.7.20 As such, the typical sensitivity versus magnitude matrix of determining impact significant in EIAs, is therefore not applied in this health assessment. However, the significance criteria used in the EIA which are set out in **Chapter 6** of this ES Scoping Report will be used, taking into account relevant information and guidance on determining significance (e.g., Human health: ensuring a high level of protection'[32]).

8.7.21 The assessment report will draw directly from findings elsewhere in the ES and technical assessments, where relevant, and include cross-references to specific ES chapters so detailed information can be easily located.

8.7.22 'Embedded Mitigation' (i.e., designed into the scheme) will be considered when undertaking the assessment. 'Further mitigation' will also be recommended where necessary to mitigate for specific likely significant effects. Where likely significant adverse effects are identified consideration will be given to the appropriateness of any monitoring measures.

8.7.23 As outlined in **Chapter 6** of this Scoping Report, the ES will assess the proposed development against the 2032 baseline. In relation to health, wellbeing and social impact, the 2032 baseline scenario will predominantly consider the 2017 Planning Consent, other strategic developments (including existing and approved development and Local Plan allocations in Puriton and Woolavington) in the local area.

[31] Cave,B. Fothergill,J., Pyper, R. Gibson, G. and Saunders, P. (2017) Health in Environmental Impact Assessment: A Primer for a Proportionate Approach. Ben Cave Associates Ltd, IEMA and the Faculty of Public Health. Lincoln, England. Available at www.iema.net

[32] Cave, B., Claßen, T., Fischer-Bonde, B., Humboldt-Dachroeden, S., Martín-Olmedo, P., Mekel, O., Pyper, R., Silva, F., Viliani, F., Xiao, Y. 2020. Human health: Ensuring a high level of protection. A reference paper on addressing Human Health in Environmental Impact Assessment. As per EU Directive 2011/92/EU amended by 2014/52/EU. International Association for Impact Assessment and European Public Health Association.

8.7.24 However, as the health, wellbeing and social ES Chapter will also draw upon other ES Chapters, different future baseline scenarios may be referenced within the assessment, for example the climate change assessment. Where this is the case this will be noted.

8.8 Limitations and Assumptions

8.8.1 As illustrated in **Figure 8.1**, there are many determinants that can have an impact on an individual's health and quality of life. It is possible for the Proposed Development to create conditions that could lead to enhanced social and health outcomes, but there are other factors determining quality of life and health that cannot be managed by the Proposed Development (e.g., performance of the wider economy and genetic factors).

8.8.2 There is a significant amount of literature regarding the evidence base for pathways between aspects of development and health outcomes. In order to provide a proportional assessment, a full literature review will not be provided in the ES and the aspects considered in HUDU provide the starting point for scoping of relevant determinants of health to be considered, including social determinants. However, a summary of pathways is provided in **Table 8.1.**

8.8.3 It should be noted that health in EIA considers the effects on such populations rather than on individuals and therefore individual occupational health and safety issues are not within the remit of this assessment.

8.8.4 The 2032 assessment will consider the impact of pending planning applications and allocated sites in the Local Plan which do not have current planning applications. These sites are not current permitted sites and therefore may not be delivered by 2032. However, including these sites covers the worst-case scenario, in terms of impacts on health and social infrastructure.

8.9 References

Cave, B., Claßen, T., Fischer-Bonde, B., Humboldt-Dachroeden, S., Martín-Olmedo, P., Mekel, O., Pyper, R., Silva, F., Viliani, F., Xiao, Y. 2020. Human health: Ensuring a high level of protection. A reference paper on addressing Human Health in Environmental Impact Assessment. As per EU Directive 2011/92/EU amended by 2014/52/EU. International Association for Impact Assessment and European Public Health Association.

Cave,B. Fothergill,J., Pyper, R. Gibson, G. and Saunders, P. (2017) Health in Environmental Impact Assessment: A Primer for a Proportionate Approach. Ben Cave Associates Ltd, IEMA and the Faculty of Public Health. Lincoln, England. Available at www.iema.net

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Somerset Health and Wellbeing Board, Improving Lives Strategy 2019-2028. Available [Online] at: http://www.somersetintelligence.org.uk/jsna/

9 Transport and Access

9.1 Introduction

9.1.1 The purpose of the transport chapter of the ES will be to describe (and, where possible, quantify) the likely impact that the Proposed Development will have on transport and access to enable an assessment to be made of likely significant transport and access effects of the Proposed Development. This chapter of the ES will be based on a Transport Assessment (TA) and will follow a scope (process has commenced – refer to **Section 9.2**) to be agreed with Somerset County Council (SCC) and Highways England (HE). This will include a multi-modal travel impact assessment which will consider the impact of the Proposed Development on all relevant transport infrastructure within and surrounding the Site.

9.2 Transport Assessment & Mobility Strategy Work Completed to Date

9.2.1 Stantec will produce a Transport Assessment (TA) and a separate bespoke Framework Travel Plan (FTP) to support the Gravity LDO, and the work for this has been ongoing for several months.

9.2.2 A draft Transport Scoping Report has been prepared and issued to stakeholders within the Transport Subgroup (defined under consultation section), followed by several draft technical notes which develop the transport assessment methodology. Further technical notes are planned to be prepared and issued to stakeholders in the future.

9.2.3 The draft Transport Scoping Report was prepared to explain the main principles of the Mobility Strategy for Gravity, and to demonstrate how the scheme is proposed to be assessed in terms of the multi modal transport impact on the surrounding network. This flows from the Gravity Clean and Inclusive strategy which priorities clean transport and specifically decarbonised transport solutions.

9.2.4 Gravity will embrace the latest thinking in mobility solutions, allowing smarter and people focused movement through the Site while creating flexible and efficient plots.

9.2.5 The transport proposals to be put forward in support of development at Gravity aim at delivering a framework for access and movement that is deliverable and effective based on current technologies, but also resilient to and able to capture the opportunities of future travel patterns and systems.

9.2.6 The Gravity Mobility Strategy will focus on each of the following elements:

- Designing ‘place’ to reduce the need to travel and to create a safe, accessible and inclusive smart campus and community to optimise outcomes.
- Reducing travel distances by car - creating sustained, better quality employment locally
- Improving access and choice for pedestrian movement
- Improving access and choice for cycle movement
- Introducing new and innovative Micro mobility measures
- Improving local bus / public transport connectivity
- Improving rail connectivity - passengers and freight

- Parking management principles
- Reducing car trips and providing shared solutions, EV charging, car higher / pools.
- Targeting investment in highways infrastructure

9.2.7 There are major societal shifts and other disruptive changes expected to have a significant impact on the way we travel in the future. Trends that are widely documented in many places, including the likes of the Department for Transport, Government Office for Science, and the Independent Transport Commission, suggest we could make fewer trips, shorter journeys, travel less by car and see reduced levels of car ownership.

9.2.8 Gravity is proposed to be assessed within the TA using a 'Vision and Validate' rather than 'Predict and Provide' approach. This means starting with a shared understanding about the nature of the place aiming to be created, devising a strategy to deliver the agreed vision, and then using the transport assessment to evaluate, appraise and set out how this could be delivered. This is proposed to be achieved through scenario testing.

9.2.9 An appropriate TA methodology has been developed to assess the Gravity development which takes account of the following:

- The LDO route being followed that offers flexibility over the final development mix which will be market led.
- The large scale and atypical nature of the development proposed.
- The Sedgemoor District Council (SDC) Transport Model tool is not suitable for full use before Summer 2021 which does not align with the LDO programme.

9.2.10 SDC is preparing a Transport Model for the district which is at the development stage now where it can be used as a source of data for the Gravity development, however the model is not suitable for forecasting analysis work.

9.2.11 It is proposed to use a consistent base dataset and to work up the Gravity development scenarios in parallel with the authority model. This will give a better understanding of the potential development impacts at an earlier stage, based on the testing of a range of variable options which can be discussed further in collaboration with the working group.

9.2.12 The Gravity travel generation assessment will be undertaken using the following process which still encapsulates the four traditional model development stages comprising of trip generation, trip distribution, modal share and trip assignment. A Scenario Testing Spreadsheet Tool is under development and early working drafts of it have already been shared with the Transport Subgroup members for their review and comment.

9.3 Baseline Conditions

9.3.1 To provide a transparent assessment, baseline conditions will generally be considered as the current conditions at the Site and in the surrounding area, factored forward to a 2032 scenario as required with an outline of the likely evolution thereof without implementation of the LDO.

9.3.2 In this respect EU Guidance at section 4.2 explains that "the evolution of the baseline — how the current state of the environment is expected to change in the future — is critical to understanding how the proposed project might impact that changing environment." (See also further EU Guidance). For instance, changes to habitats or protected areas; new concepts such as mobility as a service (Maas) and vehicle usage trends; economic and spatial changes

such as already approved but not yet implemented development schemes (e.g., the 2017 Planning Consent) as well as thresholds or limits expected to be reached.

9.3.3 The two following information scenarios will be presented to identify the baseline:

- Current State of the Environment – A description of the current state of the environment, representing the most realistic situation, which in this case would be at the stage of part implementation of the 2017 Planning Consent (i.e., Access Road, ecological enhancements and Site remediation completed).

- 2032 Baseline - An outline of what is likely to happen to the environment incorporating the 2017 Planning Consent, including the Access Road and the Village Enhancement Scheme, (but excluding the safeguarded energy land uses), approved developments and the current approach to transport forecasting and changes in travel trends.

9.3.4 Therefore, it is proposed to assess the LDO against a 2032 baseline scenario which will include the assumed delivery of the 2017 Planning Consent as provided for in the EIA Regulations. This may include permutations to reflect the potential different forms of the LDO development due to its inherent flexibility as assessed using the Scenario Testing Spreadsheet Tool.

9.3.5 This section will present the baseline conditions for the transport infrastructure and networks in the area, which are set out below:

- Current State of the Environment

- Highway network in the vicinity of the Site with the overall extents defined through scoping with the highway authorities

  - traffic data on appropriate links

  - personal injury collision data in the most recently available three-year period, to be supplied by SCC

- Pedestrian and cycle networks, including Public Rights of Way, in the vicinity of the Site

- Public transport options in the vicinity of the Site

9.3.6 The information set out in bullet form below provides a progress update in respect of new highway infrastructure that was identified as being necessary as part of the 2017 Planning Consent:

- New Site access road and its associated junctions, including the Green Bridge (construction is due to be completed in Summer 2021).

- Improvements to the A39 / Hillside junction (as above as forms part of access road scheme).

- Improvements to the A39 / Hall Road junction (as above as forms part of access road scheme).

- Puriton and Woolavington Village Enhancement Schemes providing a series of agreed highway safety, walking and cycling improvements to enable better accessibility to the Site (planning approval has been granted, and the technical approval process is currently being undertaken).

- M5 Junction 23 - has recently been upgraded to signal control through the mitigation agreed for the Hinkley Point C project. The improvement works completed differs slightly from the HEP scheme to improve Junction 23 in line with the Section 106 obligation for the 2017 Planning Consent. The built scheme provides additional theoretical capacity at the junction as it includes signalisation of the A39 Puriton Hill westbound entry to the roundabout which was proposed to operate as a give-way only within the HEP scheme.

9.3.7 The A38 Dunball roundabout was also identified for improvement as part of the HEP scheme. An improvement scheme is identified in the HEP Section 106, but it has not been delivered to date. However, SDC has identified the capacity of this junction as a constraint to development growth in Bridgwater and has decided to forward fund the delivery of the improvement scheme to unlock development.

9.4 Consultation

9.4.1 The transport scoping process commenced in November 2020 and will continue to take place through to the submission of the LDO. The scoping process involves the preparation of a series of technical notes / reports and holding regular LDO Transport Subgroup meetings (the Transport Subgroup is a Subgroup of the Gravity Delivery Group).

9.4.2 The LDO Transport Subgroup comprises appropriate members representing a range of different stakeholders including:

- Somerset County Council
- Highways England
- Sedgemoor District Council
- Heart of the South West Local Enterprise Partnership
- Network Rail
- Arup representing Sedgemoor District Council
- WSP representing Somerset County Council
- Womble Bond Dickinson
- This Is Gravity Ltd
- Stantec UK Ltd

9.4.3 Transport Subgroup meetings are typically held on a fortnightly basis where required.

9.5 Potential Significant Effects

Construction

9.5.1 The construction phasing programme is currently unknown. Therefore, the ES will describe a range of potential construction programmes, and if appropriate, undertake an assessment against the most intensive construction programme. This is likely to be based on the potential option of a very large occupier taking up a large proportion of the site and delivering rapidly over a short period of time.

Operation

9.5.2 During the operational phase, potential impacts are expected to arise relating to a number of different criteria, as set out within Institute of Environmental & Assessment guidance. These key potential impacts are set out in **Table 9.1** below.

Table 9.1 Potential effects from operational phase to be assessed

Impact	Operational Phase
Severance	✓
Driver Delay	✓
Pedestrian Delay	✓
Pedestrian Amenity	✓
Fear and Intimidation	✓
Accidents and Safety	✓

9.5.3 Potential future uses at the site will be considered, and if they could potentially generate unusual or hazardous materials, they will be assessed within the ES chapter.

9.6 Not Significant Effects

9.6.1 Restoring the rail head is unlikely to have significant effects on rail users as any disruption would be generated during planned short-term possession periods which will be outside of the peak periods.

9.6.2 A phased delivery of the development by multiple occupiers of the site undertaken over several years would not be expected to lead to significant effects for the following reasons:

- A construction traffic management plan framework is to be included in a CEMP for the Gravity LDO scheme.
- Given that the new site access road is due to be completed in Summer 2021 and will provide a direct route into the development from the A39 Puriton Hill and M5 Junction 23, bypassing local villages.
- The traffic flows are likely to be lower than the number associated with the operational phase of the development, including the proportion of HGV's.

9.6.3 The Proposed Development could include a range of potential land uses/buildings; however, they are all anticipated to be built using traditional construction techniques or off-site manufacturing that would not necessitate the transit of any unusual or especially hazardous materials. Therefore, it is considered that assessment in this regard for the construction phase will not be needed within the ES to confirm that there would not be a significant impact from the Proposed Development.

9.7 Interrelationships Between Chapters

9.7.1 The baseline data and outcomes of transport work will provide inputs for other chapters of the ES, in particular traffic flow information for Noise and Vibration and Air Quality chapters.

9.8 Assessment Methodology

9.8.1 The ES will assess the full LDO Development recognising flexibility in development parameters) against the 2032 Baseline.

9.8.2 The core document that will be used for the Transport and Access ES chapter will be the '*Guidelines for the Environmental Assessment of Road Traffic'* prepared by the Institute of Environmental Management and Assessment (IEMA - 1993). However, the assessment will also be informed by the following guidance if or when relevant:

- Design Manual for Roads and Bridges Volume 11: Environmental Assessment (2007 to 2011).
- Department for Transport, Transport Analysis Guidance (TAG) Unit A3 Environmental Impact Appraisal (May 2019).

9.8.3 The IEMA Guidelines recommend two rules to be considered when assessing the impact of development traffic on a highway link, both for existing and new links:

- Rule 1: Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and
- Rule 2: Include any other specifically sensitive areas where total traffic flows will increase by 10% or more.

9.8.4 The assessment has not been undertaken yet so it is unclear which links will meet the rules above, it is anticipated that the transport and access effects will be comparable to those assessed and demonstrated in the previous ES for the 2017 Planning Consent. As an informative, the EIA undertaken for the 2017 Planning Consent assessed the following links:

- Site access road
- Woolavington Road (west of existing site access)
- Woolavington Road (east of existing site access)
- Roads within Puriton village, located west of the Site, including:
  - Hillside and Puriton Hill
  - Hall Road
  - Riverton Road
  - Woolavington Road
- Roads within Woolavington village, located west of the Site, including:
  - Woolavington Hill between Higher Road and Old Mill Road
  - Woolavington Hill between Combe Lane and Old Mill Road, between Old Mill Road and Brent Lane
  - Combe Lane
  - Brent Road

- B3139 Causeway

- A39 Puriton Hill
  - Between Hall Road and M5 Junction 23
  - Between Hillside and Hall Road
  - Between Hillside and Bath Road
- M5 Junction 23
- A39 west of M5 Junction 23
- A38 Bristol Road north of Dunball Roundabout
- A38 Bristol Road south of Dunball Roundabout

9.8.5 The ES will be linked to and informed by a comprehensive Transport Assessment presented as an Appendix to the ES. The scope of the Transport Assessment will be agreed with the highway authorities.

9.8.6 Scenarios to be tested will be based on the future baseline and assumed LDO completion year of 2032. Different permutations of scenarios based on proposed mitigation measures may be included and agreed in consultation with the highway authorities. If likely significant adverse effects are identified, then the ES will include consideration of the appropriateness of monitoring measures.

9.8.7 The list of existing and / or approved infrastructure and developments to be included within the assessment will be agreed with SCC, SDC and HE.

9.8.8 The IEMA Guidelines explains that ‘groups’ or ‘locations’ which may be sensitive to changes in traffic conditions. The identified sensitive receptors will be rated in terms of their sensitivity on a scale of ‘high’, ‘medium’ and ‘low’ as outlined below in **Table 9.2** based on the IEMA Guidelines.

Table 9.2 Receptor Sensitivity

High Sensitivity	Medium Sensitivity	Low Sensitivity
• schools, colleges, and other educational institutions (nurseries have been assumed to be included in this category) • retirement / care homes for the elderly or infirm • roads used by pedestrians with no footways • road safety blackspots	• hospitals, surgeries and clinics • parks and recreation areas • shopping areas • roads used by pedestrians with narrow footways	• open space • tourist / visitor attractions • historical buildings • churches • other roads with active frontages and dwellings

9.8.9 Highway links with the High sensitivity will be considered against the ‘Rule 2’ threshold described above. Other links will be considered against the ‘Rule 1’ threshold.

9.8.10 The significance of transport effects will generally be determined based on the magnitude of impact, receptor sensitivity and professional judgement. This is shown in **Table 9.3** below.

Table 9.3 Significance Matrix

		Sensitivity of Receptor		
		High	**Medium**	**Low**
Magnitude of Impact	**Large**	Substantial	Major	Moderate
	Moderate	Major	Moderate	Minor
	Small	Moderate	Minor	Minor
	Negligible	Negligible	Negligible	Negligible

9.8.11 Sensitivity to changes in transport conditions will be focussed on vulnerable user groups who are less able to tolerate, adapt to, or recover from changes. Criteria for identifying these vulnerable groups will form part of the EIA process, with groups allocated to categories of sensitivity between High and Negligible to the effects.

9.9 Limitations and Assumptions

9.9.1 Owing to the limitations on movement implemented by the Government in response to the Covid-19 pandemic, it is not possible to collect representative travel data at this time (i.e., Summer 2021). It is therefore considered appropriate to use pre-COVID travel data for the purposes of this assessment.

9.9.2 It was planned to use the SDC model for this assessment but that is not going to be available within the required timescales, so there is not an area wide multi-modal transport model available. We are therefore investigating the potential use of other traffic only models owned by others including HE and SCC, combined with the outputs of our own multi-modal trip generation assessments.

9.10 References

'Guidelines for the Environmental Assessment of Road Traffic' (IEMA, 1993)

Design Manual for Roads and Bridges Volume 11: Environmental Assessment (2009)

Transport Analysis Guidance Unit A3: Environmental Impact Appraisal (DfT, 2015)

10 Noise and Vibration

10.1 Introduction

10.1.1 This chapter identifies the proposed scope of the ES in respect of the potential for likely significant effects in relation to noise and vibration. The demolition, construction, and operational stages of the Proposed Development will be assessed by Stantec UK Ltd.

10.1.2 To assess the likely significant effects of the development, the assessment will consider the impact of both existing and proposed noise and vibration sources on existing and proposed noise and vibration sensitive receptors.

10.2 Work Completed to Date

10.2.1 No assessment work has been completed prior to this scoping report however a preliminary review of the site constraints has been undertaken.

10.2.2 A noise and vibration assessment were included in the ES in relation to the 2017 Planning Consent. The assessment considered potential impacts from operational and construction phases. Operational noise associated with the access road was assessed and mitigation in the form of an earth bund adjacent to the road was designed into the scheme to attenuate noise impacts.

10.2.3 Construction phase impacts were attenuated by implementing the mitigation methods advised in BS 5228:2009 via the CEMP.

10.3 Baseline Conditions

10.3.1 An environmental sound survey was conducted in June 2011 to support the noise and vibration assessment of the Huntspill Energy Park. As an extended period has elapsed, along with changes to the Proposed Development and extent of the Site, an updated environmental sound survey is proposed.

10.3.2 The survey methodology will be designed to establish representative sound levels at existing and proposed noise sensitive receptors. It is not expected that an existing vibration survey will be required as no significant current sources of vibration have been identified

10.3.3 Based on findings of the previous assessment, the current dominant noise source likely to have an impact on the Site and the surrounding area, are vehicular movements on the M5, Woolavington Road, and Puriton Hill (A39).

10.3.4 The proposed assessment will consider a 2032 baseline based on the extant permission for the Huntspill Energy Park. The ‘Full LDO development’ scenario will be assessed against this 2032 future baseline.

10.3.5 The 2032 future baseline will be determined and based on traffic flow data from the project transport consultants. This information will be incorporated into an acoustic model of the scheme which will allow the 2032 future baseline to be calculated inclusive of the extant permission.

10.3.6 Sound associated with industrial and commercial uses (including deliveries and building services plant) will be assessed against calculated future background sound levels.

10.3.7 For the purposes of calculating the 2032 future baseline background sound levels, the calculated change in ambient sound levels as a result of the changes in traffic flows

associated with the extant permission will be used to inform the calculated increase in the background sound level, noting that the increase in background sound level is likely to be less than any calculated increase in ambient sound level.

10.4 Consultation

10.4.1 Consultation with SDC has not yet been undertaken but will be progressed as part of the ES to agree the methodology for the assessment and the approach to mitigation.

10.5 Potential Significant Effects

Construction

10.5.1 Activities associated with the demolition and construction phase of the Proposed Development (e.g., site levelling/clearance, ground excavation, concreting and building construction) have the potential to result in significant effects at existing noise sensitive receptors and proposed receptors as they become occupied during early phases of the Proposed Development. The potential effects are considered to be:

- Noise from operation of construction/demolition plant.
- Noise from construction traffic during the construction/demolition phase.
- Vibration impacts from piling and other construction activities.

10.5.2 The assessment will identify likely significant effects, and where necessary, identify mitigation measures that could be implemented through a DCEMP.

Operation

10.5.3 Aspects associated with the operation of the development that have the potential to give rise to likely significant noise and vibration effects on existing and proposed receptors are considered to be:

- Changes in road traffic flows resulting from the Proposed Development on the surrounding road network and the subsequent change in noise levels at existing sensitive receptors.
- The potential noise impact associated with the proposed employment use (including building services plant and loading/unloading) on proposed and existing noise sensitive receptors.
- The noise and vibration levels at existing and proposed noise sensitive receptors due to the reinstatement of the railhead.

10.5.4 In addition to the above, the suitability of the site for the proposed residential receptors will be considered. This will include consideration of noise levels in external amenity areas and inside habitable rooms to confirm suitable guidance levels can be met for the residential uses.

10.6 Not Significant Effects

10.6.1 Vibration associated with changes in traffic flows is not likely to be significant and is not therefore proposed to be considered.

10.7 Assessment Methodology

10.7.1 The assessment will have regard to the relevant sections of the documents that are described in more detail in **Chapter 2,** including the NPPF and Local Planning Policy and Guidance.

10.7.2 The assessment will also have due regard to the Noise Policy Statement for England (NPSE) (HMSO, 2010), For each demolition/construction and operational noise and vibration source under assessment it is proposed to use the Lowest Observed Adverse Effect Levels (LOAEL) and Significant Observed Adverse Effect Levels (SOAEL).

10.7.3 The proposed LOAEL and SOAELs would be related to the levels of significance based on descriptions for adverse effect levels outlined within the PPG for Noise, as well as recommended actions for each significance level. This significance criteria that will be used for the assessment and the levels of effect that will be significant or not significant for the purposes of the EIA Regulations is described in **Table 10.1.**

Table 10.1 Noise and Vibration Significance Criteria

Level of Effect		Noise and Vibration Adverse Effect Level	Impact and Response
Significant	Major	SOAEL	Noise/vibration causes a material change in attitude and/or behaviour. This level should be avoided.
	Moderate	LOAEL	Noise/vibration is perceptible and causes small changes in behaviour/attitude. Noise/vibration should be mitigated and reduced to a minimum
Not Significant	Minor	NOEL	Noise/vibration is perceptible but does not causes any change in behaviour/attitude and no specific measures are required
	Negligible or No Effect		Noise/vibration has no effect, and no specific measures are required.

10.7.4 **Table 10.2** summarises the relevant standards and guidance documents that the assessment and methodologies will use to determine the level of effect.

Table 10.2 Summary of Reference Documents

Assessment/Methodologies	Reference Documents
Instrumentation and Measurement Procedures	BS 7445: Part 1:2003 BS 61672: Part 1:2013
Demolition and Construction Noise and Vibration Impacts	BS 5228-1:2014+A1:2014 BS 5228-2:2014+A1:2014
Internal and External Ambient Noise Levels	BS 8233:2014 ProPG: Planning & Noise World Health Organisation Guidelines for Community Noise World Health Organisation Environmental Noise Guidelines for the European Region Design Manual for Roads and Bridges (DMRB)
Vibration Levels	BS 6472-1:2008
Building Services, Commercial and Industrial Impacts	BS 4142:2014

10.7.5 A computer acoustic model will be produced using SoundPLAN v8.2 and will utilise traffic data provided by the project transport consultants. Sound propagation across the Site would be determined using calculation methodologies detailed within the CRTN (Department for Transport Welsh Office, 1988) and ISO 9613-2:1996 (International Organisation for Standardisation, 1996). The model would include the surrounding road network.

10.7.6 Assessment of industrial and potential energy uses would have regards to BS 4142:2014.

10.7.7 Mitigation measures will be identified as appropriate, while the requirement for monitoring will be considered if likely significant adverse effects are identified.

10.8 Limitations and Assumptions

10.8.1 Owing to the size of the Proposed Development and the nature of the surrounding area, a limited selection of noise sensitive receptors will be identified to represent the worst-case change in the environmental noise climate. As such, this means that not every single noise-sensitive receptor will be included within the assessment, only worst-case receptors will be selected.

10.8.2 It should be noted that sound surveys undertaken after March 2020, until lockdown measures are removed, may be impacted due to the likely reduction in transportation activities as a result of the COVID-19 pandemic. Therefore, a comparison exercise will be undertaken with strategic noise maps produced by Defra under the Environmental Noise (England) Regulations, 2006 and previous sound surveys undertaken as part of the Huntspill Energy Park application to confirm the sound survey data is representative.

10.9 References

Guidelines for Community Noise, World Health Organization (WHO), 1999;

Night Noise Guidelines for Europe, World Health Organization, 2009;

BS 8233:2014 ‘Guidance on sound insulation and noise reduction for buildings’, British Standards Institute, 2014;

BS 4142:2014+A1:2019 ‘Methods for rating and assessing industrial and commercial sound’, 2019;

BS 5228-1:2009+A1:2014 ‘Code of practice for noise and vibration control on construction and open sites - Part 1: Noise’, British Standards Institute, 2009 + A1:2014, 2014;

BS 5228-2:2009 ‘Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration’, British Standards Institute, 2009;

BS EN 61672-1:2013 ‘Electroacoustics. Sound level meters. Specifications’, British Standards Institute, 2013;

BS 6472-1: 2008 ‘Guide to evaluation of human exposure to vibration in buildings – Part 1: Vibration sources other than blasting’, British Standards Institute, 2008;

BS 7445 ‘Description and measurement of environmental noise – Part 1: Guide to quantities and procedures’, British Standards Institute, 2003;

Design Manual for Roads and Bridges (DMRB), LA 111 Noise and vibration, 2020; and

ProPG: Planning and Noise, ‘Professional Practice Guidance on Planning and Noise. New Residential Development’, 2017.

11 Air Quality

11.1 Introduction

11.1.1 This chapter has been prepared by Stantec UK and sets out the technical details of the air quality assessment that will be reported in the ES.

11.1.2 Air quality has been scoped into the ES owing to the potential for likely significant effects as a result of emissions to air primarily associated with emissions from traffic during the operational stage. The proposed methodologies and scope of the assessment are provided in the following sections.

11.2 Work Completed to Date

11.2.1 No assessment work has been completed prior to this scoping report however a preliminary review of the site constraints has been undertaken and likely air quality sensitive receptors have been identified.

11.2.2 The 2013 ES (and 2017 addendum) for the EIA process in respect of the 2017 Planning Consent HEP was informed by an air quality monitoring in the local area and included a detailed air quality assessment of the potential impacts associated with both road traffic and potential energy usages. The ES found that potential air quality effects of the HEP were 'not significant'.

11.3 Baseline Conditions

11.3.1 The Site is located within the boundary of Sedgemoor District Council (SDC) which has not declared any Air Quality Management Areas (AQMAs). There have been no measured or predicted exceedances of the annual mean NO_2, PM_{10} or $PM_{2.5}$ UK Air Quality Objectives (AQO) in proximity to the Site.

11.3.2 In 2019, SDC undertook automatic (continuous) monitoring at four sites for PM_{10} and $PM_{2.5}$ (focussed on main traffic routes associated with Hinkley Point construction) and non- automatic (passive) monitoring of NO_2 at 32 locations. The closest (over 2km from the main site (excluding access routes), to the west of the M5) monitoring location at Bristol Road, Dunball, the concentrations of NO_2 were less than 30 µg/m^3 in 2019 (below the UK AQO of 40 ug/m^3).

11.3.3 The M5 motorway and A38/A39 represent the largest local sources of traffic related emissions but, apart from the area of the Site for the rail head connection route, these are not in close proximity (>500m from the boundary) to the Proposed Development and therefore considered unlikely to significantly affect current air quality within the Site. Equally the Walpole Landfill Site (operated by Viridor) will be a source of emissions to air is approximately 1km from the Proposed Development, apart from the area of the Site for the rail head connection route, and therefore unlikely to significantly affect current air quality within the Site.

11.3.4 The current state of the environment is therefore considered unlikely to be significantly impacted by air pollutants and anticipated to improve (DEFRA, 2019) given that emissions of air pollutants associated with traffic (particularly nitrogen dioxide (NO_2)) are predicted to decrease in the future primarily due to the expected reduction in vehicle emissions resulting from renewal and increased uptake of electric vehicles.

11.3.5 DEFRA has published projections for both background air quality (DEFRA, 2020a) and traffic emissions (DEFRA, 2020b) which include the effect of various regulatory and policy measures to improve air quality (alongside other requirements such as reduction of carbon emissions) and the predictions for 2030 will be applied to characterise the 2032 baseline.

11.4 Consultation

11.4.1 Consultation with SDC has not yet been undertaken but will be progressed as part of the ES to agree the methodology for the assessment and the approach to any required mitigation.

11.5 Potential Significant Effects

11.5.1 The potential for significant effects as a result of the construction as well as the operation of the Proposed Development will be addressed in the assessment by considering the following air pollutants, as appropriate to the development included in the LDO, due to their potential release rate and elevated background concentrations:

- NO_2;
- Fine airborne particulate matter (PM_{10} and $PM_{2.5}$);
- Other products of combustion (i.e., carbon monoxide, sulphur dioxide, ammonia, hydrogen chloride depending on fuel);
- Trace pollutants (metals and organic) from industrial processes or combustion-based power generation; and
- Dust.

11.5.2 The main sources of these pollutants are likely to be road vehicles (NO_2, PM_{10} and $PM_{2.5}$) and construction activities (dust and PM_{10}). At this stage it is anticipated that the reinstatement of the railhead is unlikely to materially affect air quality, but this will be considered based on the anticipated number of train movements. Professional experience indicates that no other pollutants represent a risk of potentially significant effects.

11.5.3 The proposed Study Area for this assessment will be as follows:

- For the construction dust risk assessment, the Study Area (based on the Institute of Air Quality (IAQM) guidance) is defined as comprising the area up to 350 m from the Site boundary and 50 m from the route(s) used by demolition and construction vehicles (up to 500 m from the Site entrance(s));
- For assessment of road traffic emissions (during both operation and construction), the Study Area (based on the Environmental Protection UK (EPUK) / IAQM guidance) includes all roads (and any adjacent sensitive properties) within 250 m of any roads where development traffic flows are predicted to exceed the EPUK / IAQM screening criteria of an increase of 500 total Annual Average Daily Traffic (AADT) or 100 Heavy Duty Vehicle (HDV) AADT (or an increase of 100 total AADT or 25 HDV AADT inside of an AQMA);
- For the assessment of industrial processes and onsite combustion-based power generation processes, the study area will extend up to 10km (for ecological receptors and potentially 15km for large combustion plant) from the site.

Construction

11.5.4 Dust generated by the Proposed Development during construction activities and as a result of track out by construction traffic has the potential to impact on amenity and air quality as a result of dust soiling and increased concentrations of PM_{10} respectively. There is the potential for sensitive existing receptors (e.g., residences) located within up to 350 m from the Site boundary and 50 m from the route(s) used by demolition and construction vehicles to experience impacts.

11.5.5 There is the potential for impacts on air quality as a result of emissions of NO_2, PM_{10} and $PM_{2.5}$ from construction traffic associated with the Proposed Development. These impacts have the potential to occur at sensitive existing receptors (e.g., residences) that are located in close proximity to roads along which the construction traffic will travel.

11.5.6 Given the approach as set out in **Section 6.2**, approved developments (or those considered likely to have been approved and implemented by 2032) are factored into the 2032 baseline, and therefore the assessment of likely significant cumulative effects with these developments during construction is inherent to the assessment and will not be reported separately.

Operation

11.5.7 There is the potential for impacts on air quality as a result of emissions of NO_2, PM_{10} and $PM_{2.5}$ from traffic associated with the Proposed Development during its operation. These impacts have the potential to occur at sensitive receptors (e.g., existing residences, schools and any potential proposed onsite sensitive land uses) that are located in close proximity to roads along which the operational traffic generated by the Proposed Development will travel.

11.5.8 The impact of existing (and proposed) road traffic emission sources, in particular, the M5, A38/A39 on air quality at receptor locations will also be assessed.

11.5.9 Given the approach as set out in **Section 6.2**, approved developments (or those considered likely to have been approved and implemented by 2032) are factored into the 2032 baseline, and therefore the assessment of likely significant cumulative effects with these developments during operation is inherent to the assessment and will not be reported separately.

11.5.10 The energy strategy for the Proposed Development whilst renewable led, could include onsite combustion-based sources for heat or power generation and backup supply.

11.5.11 Depending on technology and capacity, the resultant emissions from combustion-based plant or industrial activities have the potential to cause likely significant effects on both human and ecological receptors. However, effective mitigation options (such as low-NOx burners, abatement and appropriate stack height) are typically required by other regulatory regimes and therefore considered to be embedded within the design of the Proposed Development and assessed as such. Any further mitigation measures that are identified will be reported in the ES. The residual effects of the Proposed Development on air quality will be assessed within the ES, with monitoring considered if likely significant adverse effects are identified.

11.6 Not Significant Effects

11.6.1 The following potential non-significant effects are not proposed to be considered for further assessment:

- Potential indirect impacts of traffic emissions on designated ecological sites. Taking into account the location of ecological sites and likely routing of traffic movements from the Proposed Development it is concluded that the overall effect of the Proposed Development on ecology via indirect air quality impacts will be ‘not significant’. Therefore, the potential indirect effects of air quality emissions from traffic on ecology will not be considered within the Air Quality ES Chapter.

11.7 Assessment Methodology

11.7.1 Conditions for the current state of the environment will be defined using the Department for Environment, Food and Rural Affairs’ (DEFRA’s) ‘UK Air, Air Information Resource’ website, DEFRA’s 2019 NO_2 Projections Data and monitoring data from SDC’s latest available Local

Air Quality Management (LAQM) report. Data from 2019 is likely to be predominately applied as 2020 data will not be representative of longer-term conditions.

11.7.2 The prediction of future baseline conditions will apply DEFRA projections (DEFRA 2020a & 2020b) and as defined by the assessment scenarios; the 2032 baseline will incorporate the likely impacts associated with the HEP 2017 Planning Consent (excluding safeguarded usages)

11.7.3 The methodology for the assessment of likely significant effects will be undertaken as detailed in **Table 11.1** below.

Table 11.1: Assessment Methodology

Potential Impact	Relevant Guidance	Qualitative / Quantitative Assessment	Overview of Methodology
Demolition and Construction Dust Risk	IAQM (2014)	Qualitative	The assessment will determine the risk of impacts from demolition, earthworks and construction activities and as a result of trackout based on the magnitude of activities and the overall sensitivity of the surrounding area. A package of appropriate mitigation measures will be recommended based on the outcome of the assessment to ensure that effects will not be significant.
Impact of Emissions from Construction Traffic Associated with the Proposed Development	EPUK / IAQM (2017)	Qualitative (further quantitative assessment may be required depending upon the outcome of the initial qualitative assessment)	Impacts will be assessed qualitatively, taking into account the volume, composition and distribution of development related traffic, the duration of construction activities and existing and predicted concentrations of pollutants at sensitive locations in the study area.
Impact of Emissions from Operational	EPUK / IAQM (2017)	Qualitative	The potential for significant impacts will be determined using the screening criteria outlined by the EPUK / IAQM guidance

Potential Impact	Relevant Guidance	Qualitative / Quantitative Assessment	Overview of Methodology
Traffic Generated by the Proposed Development		Quantitative	Based on the outcomes of the qualitative assessment, concentrations of NO_2, PM_{10} and $PM_{2.5}$ at sensitive receptors locations in the study area (including both existing and proposed residential properties within the Site) will be predicted using atmospheric dispersion modelling (ADMS-Roads). Modelled concentrations will be verified using appropriate local monitoring data. Predicted concentrations will be compared to the relevant AQOs to identify any exceedances and impacts will be determined using the criteria outlined in the EPUK / IAQM guidance.
Impact of emissions from onsite combustion-based heat or power generation plant	DEFRA TG(16) EPUK / IAQM (2017)	Qualitative (further quantitative assessment may be required depending upon the outcome of the initial qualitative assessment)	The potential impact of emissions from combustion-based power generation plant and industrial facilities will be assessed using either 'screening techniques' (DEFRA TG16) for less significant sources and detailed dispersion modelling (AERMOD) in accordance with Environment Agency guidance where appropriate. The potential for significant impacts on human receptors will be determined using the screening criteria outlined by EPUK / IAQM guidance. The potential for significant indirect impacts on ecological receptors will be determined using Environment agency (EA, 2012) and IAQM (IAQM, 2019) guidance.

11.8 Limitations and Assumptions

11.8.1 There has been an acknowledged disparity between national road transport emissions projections and measured annual mean concentrations of nitrogen oxides (NOx) and NO_2 for many years. However, recent monitoring has shown that reductions in concentrations are now being measured in many parts of the country (Air Quality Consultants Ltd., 2020) and current toolkits published by DEFRA (DFRA 2020a & 2020b) used to quantify pollutant emissions and future trends are considered representative (Air Quality Consultants Ltd., 2020b).

11.8.2 Whilst there is still some uncertainty regarding the rate at which NOx emissions will reduce in the future, the existing toolkit (DEFRA, 2020b) incorporates limited uptake of Electric Vehicles (EV) and therefore is likely to over predict NOx emissions in future years and the application of 2030 predicted emissions to the 2032 assessment scenario, is therefore considered sufficiently precautionary.

11.8.3 Whilst the impact of COVID-19 related travel restrictions on air quality will have reduced traffic related emissions, this will not impact the characterisation of the current conditions as 2019 monitoring data will be applied. The potential longer-term effects (post travel restrictions) on travel behaviour will be considered with the Transport data applied.

11.9 References

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12 Biodiversity

12.1 Introduction

12.1.1 The Biodiversity ES chapter will examine the existing state of the environment in relation of ecology and nature conservation within and in proximity to the site. It will consider how the existing state of the environment will evolve to 2032 and will consider the potential effects of the construction and operation of the proposed development in relation to ecology and nature conservation at the Site.

12.1.2 In addition to this, the chapter will assess the LDO Development against the future baseline scenario where the 2017 Planning Consent has been delivered. This will include the approved development anticipated to come forward and incorporating ecological mitigation required as part of the 2017 Planning Consent. This scenario is referred to as the 2032 Baseline.

12.1.3 The ES Chapter will consider the potential effects of the proposed development on the habitats and species present as part of the 2032 Baseline. In addition, the chapter will consider the effects on statutory and non-statutory designated sites within the Site and the local area on the basis that the 2032 Baseline has been implemented.

12.1.4 The biodiversity chapter of the ES will be prepared by Ecology Solutions Ltd.

12.2 Work Completed to Date

12.2.1 The majority of the Site has been the subject of extensive and numerous ecological surveys since 2008. EnvironPlus International Limited (EPI) undertook an initial suite of surveys in 2008, with Ecology Solutions having undertaken regular update work since 2011.

12.2.2 Survey and assessment works are detailed in the Environmental Statement (2013) and ES Addendum (2017) produced by Ecology Solutions in support of the 2017 Planning Consent.

12.2.3 The ecological information collected at the Site, or parts thereof, has been used to inform the decommissioning and remediation works that have been undertaken onsite. This has involved the submission of Natural England licence applications for roosting bats, Great Crested Newts *Triturus cristatus*, Water Vole *Arvicola amphibius* and Badgers *Meles meles*. The surveys have also informed general site maintenance and habitat management. All of these elements will be considered within the context of the 2032 Baseline, given that the works undertaken relate to both the construction and operational phases of the 2017 Planning Consent.

12.2.4 Ecology Solutions was further commissioned on behalf of This Is Gravity in March 2020 to undertake a comprehensive programme of ecology surveys at the Site. This survey information will be considered as the basis for the current state of the environment.

12.2.5 It should be noted that the LDO boundary is greater than that of the 2017 Planning Consent. As such 2020 survey work covered the entire LDO boundary which represent a greater area of land compared to the survey work undertaken to inform the 2013 ES and 2017 ES Addendum.

12.2.6 The methodology utilised for the survey work undertaken can be split into three areas, namely desk study, habitat survey, and faunal surveys. These are discussed in more detail below.

12.2.7 In order to compile updated background information on the Site and its immediate surroundings including species and habitat records, Ecology Solutions contacted Somerset Environmental Records Centre (SERC). Further information on designated sites from a wider search area up to 4km was obtained from the online Multi-Agency Geographic Information for

the Countryside (MAGIC) database. The historic survey information available from previous survey and assessment work onsite has also been reviewed as part of this process.

Habitat Surveys

12.2.8 Habitat surveys were undertaken throughout 2020 to ascertain the general ecological value of the Site and to identify the main habitats and associated plant species.

12.2.9 The Site was surveyed based around extended Phase 1 survey methodology, as recommended by Natural England, whereby the habitat types of present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail.

12.2.10 The following main habitat / vegetation types were identified:

- Improved Grassland;
- Semi-Improved Grassland;
- Amenity / Rough Grassland;
- Marshy Grassland;
- Plantation Woodland / Orchard;
- Trees;
- Scrub;
- Hedgerows;
- Tall Ruderal Vegetation;
- Ephemeral / Short Perennial Vegetation;
- Standing Water;
- Reed Bed;
- Bare Ground;
- Seasonal Wet Ditches / Dry Ditches; and
- Buildings and Hardstanding.

12.2.11 The vegetation present enabled the habitat types to be satisfactorily identified and an accurate assessment of the ecological interest of the habitats to be undertaken.

Faunal Surveys

12.2.12 General faunal activity observed during the course of the surveys was recorded, whether visually or by call. Specific attention was paid to the potential presence of any protected, rare, notable or Priority Species. In addition, specific surveys were undertaken for bats, Badgers, breeding birds, reptiles, Water Vole, Great Crested Newt, and invertebrates. Methodologies

for the survey work employed have been developed with regards to recognised guidance and standards specific to each species / species group.

12.2.13 Bat activity has been recorded across the Site, including a number of roost sites located within buildings within the south of the Site. Furthermore, bespoke bat roosts have also been created within the west of the Site as part of the licenced mitigation strategy related to the loss of onsite roosts. Species recorded include Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Nathusius' Pipistrelle *Pipistrellus nathusii*, Serotine *Eptesicus serotinus*, Brown Long-eared Bat *Plecotus auritus*, *Nyctalus* sp. and Myotis sp. In addition, a number of rarer bat species have been recorded including Greater Horseshoe Bat *Rhinolophus ferrumequinum*, Lesser Horseshoe *Rhinolophus hipposideros* and Barbastelle *Barbastella barbastellus*.

12.2.14 Evidence of Badgers using the Site has been recorded, including a number of setts, one of which is an artificial sett created as part of a licenced sett closure. The licence was granted on the basis of the remediation consent granted in 2012 (planning reference: 42/17/00017). These setts are associated with the rail spur within the north west of the Site.

12.2.15 A variety of bird species have been recorded utilising the Site. In total 47 species were recorded during the 2020 surveys with 28 of these species showing signs of breeding including singing, nest construction and territory displays. A further three species were recorded that were likely to be breeding however no signs of this were recorded during the surveys. The survey identified a number of species listed on Schedule 1 of the Wildlife and Countryside Act, the UK and Somerset BAPs and/or on the Red and Amber Lists of Species of High Conservation Concern. Such species include Cetti's Warbler *Cettia cetti*, Marsh Harrier *Circus aeruginosus* and Kingfisher *Alcedo atthis*.

12.2.16 A small population of Grass Snake *Natrix helvetica* have been recorded in the north of the Site, in association with the reed bed / wetland habitats.

12.2.17 The system of rhynes and reedbed onsite are known to hold a small yet dispersed population of Water Vole. American Mink *Neovison vison* are also known to be present onsite and are considered to be contributing to the dispersed nature of the Water Vole as a result of predation. American Mink populations will be subject to control as part of any licenced Water Vole strategy.

12.2.18 Translocations of Great Created Newts have been undertaken onsite. The central part of the Site was cleared of Great Crested Newts in 2017 as part of the onsite remediation process and a separate licenced exclusion was undertaken in 2014 within the southeast of the Site as part of drainage works. As part of this process, receptor sites have been created within the north west and south east of the Site (the locations are shown on plan ECO8 of Appendix 12.1). Their presence has been confirmed within these receptor areas through update survey work in 2020. The reed bed and adjacent rhynes to the north of the Site were also sampled for eDNA in 2020 and returned negative results for the presence of this species.

12.2.19 Detailed update invertebrate surveys were completed in 2020 across the Site. Habitat assessments were completed in early 2020, with sample collection undertaken thereafter. Initial findings have noted a number of nationally scarce species, such as a Horsefly *Atylotus rusticus*, that are associated with habitat features within the Site.

12.2.20 Further details of the methodologies and survey results are presented within the Ecology Baseline Report (**Appendix L**).

12.3 Baseline Conditions

12.3.1 As noted above, the chapter assesses the LDO Development against the future baseline scenario where the 2017 Planning Consent has been delivered. This will include the approved

development and incorporate ecological mitigation required as part of the 2017 Planning Consent.

12.3.2 As set out above, the historic and current state of the environment is well understood. However, it is important to note that the 2032 Baseline will be significantly different from the Sites current state. These differences are considered further below.

Habitats within the 2032 Baseline

12.3.3 The habitats that form the 2032 baseline will represent those delivered as part of the 2017 Planning Consent. This will include all landscape features, drainage features and built form as well as habitat creation within the ecological mitigation measures. The time required to establish these habitats will be considered as part of the baseline, as some habitats / features can be established relatively quickly (i.e., grasslands) compared to others (i.e., mature trees).

12.3.4 It is important to note that the LDO boundary represents a greater area of land compared to the boundary of the 2017 Planning Consent. As such, the LDO boundary contains areas that fall outside of the 2017 Planning Consent. Where areas fall outside of the 2017 Planning Consent, but within the LDO boundary, they will be considered to be unchanged from their current state (as described within the 2020 survey work), except where reasonable changes can be predicted.

Faunal Species within the 2032 Baseline

12.3.5 As with the future habitats baseline, the use of the Site by faunal species within the 2032 Baseline will take account of all the mitigation measures set out within the 2017 Planning Consent. Again, the baseline will take account of the difference between the 2017 Planning Consent boundary and the LDO boundary, where relevant.

12.3.6 As set out above in relation to works completed to date, a significant proportion of mitigation work related to protected species has been completed as part of the demolition and remediation of the Site. This work and all other species-specific mitigation measures that are to be delivered as part 2017 Planning Consent will be considered as part of the 2032 Baseline.

Designated Sites within the 2032 Baseline

12.3.7 A number of designated sites of nature conservation interest are present in proximity to the Site, including several that fall within the Site itself. The designated sites and their relationship within the Site are described below with consideration given to the 2032 Baseline scenario.

12.3.8 The nearest statutory designated site is the Huntspill River National Nature Reserve (NNR), which is located immediately to the north of the Site, with a small section (c.0.7ha of a total 148.98ha) within the Site boundary itself. The location of the Huntspill River NNR is shown at Appendix 1 of **Appendix L**. The legal protection afforded to NNRs is usually underpinned by their designation as a Site of Special Scientific Interest (SSSI), however in this case there is no such designation. The Huntspill River NNR consists of open water, lowland grassland and small areas of woodland. It supports populations of Otter *Lutra lutra* and Barn Owl *Tyto alba*. It is also designated owing to its supporting and connecting habitat between the Severn Estuary Special Protection Area (SPA) and the Somerset Levels SPA. As part of the 2017 Planning Consent and EIA process it was concluded that the area within the Site that falls within the Huntspill River NNR will not be adversely affected.

12.3.9 The next nearest statutory designated site is Bridgwater Bay SSSI, which is situated approximately 2.2km to the west of the Site at its closest point. The SSSI forms part of the Severn Estuary SPA and Ramsar Site (approximately 2.2km to the west of the Site). Part of the Bridgwater Bay SSSI also forms part of the Severn Estuary Special Area of Conservation

(SAC), which is located approximately 2.6km to the west of the Site. This area is designated for its internationally important populations of wildfowl and waders, its coastal habitats and three annex II species of fish.

12.3.10 Catcott, Edington and Chilton Moors SSSI is situated 3.1km to the east of the Site. This SSSI forms part of the Somerset Levels SPA and Ramsar site. The Somerset Levels and Moors SPA and Ramsar site is designated for its important assemblages of wintering wildfowl and waders including four Annex I species.

12.3.11 The 2017 Planning Consent and the LDO Development are not considered to give rise to any likely significant effects on any of the above designated sites. However, a standalone shadow Habitats Regulation Assessment (HRA) Report will be prepared and submitted along with the ES and other LDO documentation. It should be noted in relation to the shadow HRA that the site is not hydraulically connected with the Somerset Levels and Moors Ramsar Site.

12.3.12 There are ten non-statutory designated sites of nature conservation interest within or adjacent to the Site. As part of the 2017 Planning Consent, impacts arise on several of these sites in the form of land take and/or changes to habitat type, some of which have been implemented as part of the remediation of the Site. In addition, ecological mitigation and enhancement measures secured by the 2017 Planning Consent are to be delivered at several of these sites. The 2032 Baseline will include the full implementation of these measures.

12.3.13 In the northeast corner of the Site lies Puriton Rhyne and Ponds Local Wildlife Site (LWS), which includes an area of reed bed that is present within the north of the Site and leads towards the Huntspill River. It is designated for its notable plant species within the rhynes (drainage ditches), and because it supports Otter and the nationally scarce Hairy Dragonfly *Brachytron pratense*. Under the 2017 Planning Consent, part of this LWS would be lost to development with other features enhanced.

12.3.14 Borrow Pit LWS is situated in the east of the Site. It is designated for its breeding population of Cetti's Warbler.

12.3.15 Stoning Pound Field and Rhyne LWS is situated to the east of the Site and to the south of the Borrow Pit LWS. It is designated for its notable plant species and on account of it previously supporting Otter.

12.3.16 Woolavington Road and Fields North LWS is situated within the south of the Site. It is designated for the mire habitats that it supports.

12.3.17 Puriton Cowslip Field LWS is situated within the Site to the north of the Woolavington Road and Fields North LWS. It is designated for the grassland habitat and the plant species it supports. Under the 2017 Planning Consent, part of this LWS would be lost to development with other features enhanced.

12.3.18 Puriton Ash Ground LWS is situated within the western part of the Site and is designated for notable plant species that it supports. It is a species rich re-colonising waste ground with areas of scrub. The area was used as tip for rubble and ash associated with the ROF. This has provided a basic nutrient poor substrate that has allowed the plant species to establish. Part of the LWS has been capped under a landscape feature as part of the remediation works.

12.3.19 Northmead Drove Fields LWS is situated within the northwest of the Site. It is designated for its mosaic habitats of grassland and rhynes.

12.3.20 Puriton Meadows and Rail Spur LWS is situated within the northwest of the Site and then continues along the railway spur to the northwest outside of the Site where it bisects the Northmead Drove Fields LWS. It is designated for its notable species that it supports and an area of semi natural grassland.

12.3.21 New Ground Covert LWS is situated outside of the Site boundary, to the south of the route of the access road currently under construction. It is designated for the ancient semi-natural broadleaved woodland habitat that it supports. However, the woodland is not classified as ancient woodland under the ancient woodland inventory.

12.3.22 South Hills Wood LWS is situated outside of the Site boundary, to the south-west of the route of the access road currently under construction. It is designated for the ancient semi-natural broadleaved woodland and species rich grasslands that it supports. However, the woodland is not classified as ancient woodland under the ancient woodland inventory.

12.3.23 In considering the timeframe of the 2032 Baseline, it is anticipated that the LWSs onsite will be subject to review by the Local Wildlife Sites Panel over this period and changes that have arisen as part of the 2017 Planning Consent will be reflected with revised LWS boundaries and/or qualifying features. Where parts of LWSs are lost to development, it can be expected that these parts will be excluded from the relevant LWS site boundary and where changes to habitat types or quality are delivered these will be reflected within revised citations. The 2032 Baseline will take account of these anticipated changes where appropriate.

12.4 Consultation

12.4.1 Consultation with relevant authorities and stakeholders in relation to the LDO has to date taken place in the form of regular (monthly) LDO Delivery Group meetings. Consultees include, representative of Sedgemoor District Council, the Area Manager for Somerset, Avon and Wiltshire at Natural England and the Environment, Planning and Engagement Manager for South West at Environment Agency.

12.4.2 In tandem with the LDO Delivery Group meetings, regular Environment sub-Group meetings have taken place. These have been attended by relevant stakeholders to discuss aspects of the project relevant to ecology, hydrology and landscaping.

12.4.3 Meetings have also been held directly with representatives of Natural England and the Environment Agency with regard to specific issues relevant to ecology including nutrient neutrality and protected species licencing.

12.5 Potential Significant Effects

Demolition and Construction

12.5.1 The potential significant ecological effects as a result of the proposed development during demolition and construction are expected to be:

- Direct and indirect effects on statutory and non-statutory designated sites as a result of land take or reclamation, lighting, noise and contamination;
- Direct and indirect effects related to the loss, gain or change of habitats onsite;
- Direct and indirect effects on retained habitats of ecological value, including damage by machinery, contamination and suppression by dust as well as ecological enhancement and management; and
- Direct and indirect effects upon faunal species including habitat loss, gain or change and disturbance through increased/decreases lighting and noise.

Operation

12.5.2 The potential significant ecological effects as a result of the development during the operation phase are expected to be:

- Direct and indirect effects on statutory and non-statutory designated sites during the operational phase including increases/decreases in recreational pressure, lighting, noise and overshadowing;
- Direct and indirect effects on retained habitats of ecological value, including increases/decreases in recreational pressure, lighting and overshadowing; and
- Direct and indirect effects on faunal species during the operational phase through changes in management regimes, recreational pressure, lighting, noise and overshadowing.

12.6 Not Significant Effects

12.6.1 Potential effects arising during the demolition, construction and operation phases associated with the New Ground Covert LWS and South Hills Wood LWS are not considered to be significant. These LWSs are located outside the Site to the south west, in close proximity to the access road. Whilst the LDO boundary does include the access road, the road itself is currently under construction and the potential effects on the nearby LWSs have already been considered. No significant effects are considered to arise on these LWSs as a result of the Proposed Development, given that the access road forms part of the baseline for the assessment.

12.6.2 Potential changes to emissions as part of the proposed development are considered unlikely to result in any significant effect on ecological receptors. On this basis, consideration of air quality issues has been scoped out of this assessment.

12.7 Assessment Methodology

12.7.1 The ecological study area is primarily defined as the areas contained within the LDO boundary. Consideration has also been given to areas outside of the LDO boundary, for example in light of the hydrological links between the Site and designated sites in the wider area, including those described above at paragraph 13.3.21, consideration has been given to the potential for adverse effects to arise at these sites from the Proposed Development. Furthermore, consideration has been given to areas adjacent to the Site, including ponds up to 500m from the Site boundary that may support breeding Great Crested Newt and potential Badger setts located within 30m from the Site boundary.

12.7.2 Identification and assessment of likely significant ecology effects of the proposed development will use the following well established models and standard procedures, alongside professional judgement.

12.7.3 The evaluation and impact assessment method are based on the guidelines produced by the Chartered Institute of Ecology and Environmental Management (CIEEM), which relies on an approach that involves professional judgement and the use of available guidance and information, rather than the provision of definitions to assign habitats and species different levels of value.

12.7.4 The value of each resource has been determined within a defined geographical context:

- International;
- National (England/Northern Ireland/Scotland/Wales);

- Regional (e.g., County);
- Local (within the District); or
- Within Zone of Influence (i.e., Neighbourhood) only.

12.7.5 A number of other key aspects require consideration when determining the value of any identified receptor. These include:

- Designated Sites and Features (e.g., Special Protection Areas, Sites of Special Scientific Interest, important hedgerows, etc.);
- Biodiversity Value (e.g., consideration of UK Priority Species and Habitats, Local Biodiversity Action Plan (BAP) targets, development plans and other published documents);
- Potential Value;
- Secondary or Supporting Value;
- Social or Economic Value; and
- Legal Issues.

12.7.6 For example, the local Biodiversity Action Plan (North Somerset Biodiversity Action Plan [NSBAP]), has been used to assist in valuing features and developing mitigation strategies, where necessary. Consideration has also been given to the Sedgemoor Local Plan.

12.7.7 Having identified the ecologically important features likely to be affected by the proposed development, the guidance promotes a transparent approach in which an impact is determined to be significant or not on the basis of a discussion of the factors that categorise it. This includes characterising the nature of the likely impacts on each important feature in terms of ecological structure and function, by considering the following parameters:

- Beneficial or adverse;
- Extent;
- Magnitude
- Duration;
- Reversibility; and
- Timing and frequency.

12.7.8 Where it is concluded that there would be an impact (beneficial or adverse) on a defined site or ecosystem(s) or habitats or species within a given geographical area, its significance can often be further described in the following terms; substantial, major, moderate, minor, and insignificant. However, given the subjective nature of these criteria, CIEEM consider that this approach should only be applied where consistency is required across chapters or where the specific subjective nature of the evaluation is explained. In order to maintain consistency across the Environmental Statement, when applying these criteria within this chapter, it will be necessary to make a clear distinction between evidence-based and value-based judgements to clarify the level of subjective evaluation that has been applied. Mitigation measures will be

identified as appropriate, while the requirement for mitigation will be considered if likely significant adverse effects are identified.

12.7.9 The assessment will also give specific consideration to the concept of biodiversity net gain. This process involves the quantitative comparison of the baseline situation with the proposed development. With the use of a relevant metric (e.g., the DEFRA metric) a biodiversity impact assessment can be undertaken, that both informs the design of proposed development and assists with quantifying the apparent loss or gain in biodiversity that will result from the proposed development.

12.8 Limitations and Assumptions

12.8.1 All of the species that occur in each habitat would not necessarily be detected during survey work carried out at any given time of the year, since different species are apparent at different seasons. However, given the habitats present and the level of historic and up to date survey work that has been conducted, it is considered that an accurate and robust assessment of the ecological value of the habitats present within the Site has been made. Therefore, it is considered that the survey information available forms a robust basis on which to undertake an ecological impact assessment.

12.8.2 As part of the 2032 Baseline, it is anticipated that the LWSs onsite will be subject to review over this period and changes that have arisen as part of the 2017 Planning Consent will be reflected within revised LWS boundaries or qualifying features. Where parts of LWSs are lost to development, these parts will be excluded from the site boundary and where changes to habitat types or quality are delivered these will be reflected within revised citations.

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13 Water Environment

13.1 Introduction

13.1.1 This chapter has been produced by Stantec UK, providing an overview of the proposed ES scope and an initial assessment of the current state of the Water Environment in relation to the Proposed Development. The proposed scope and initial existing conditions assessment are in accordance with NPPF and accompanying PPG *Flood Risk and Coastal Change*, and encompass the potential for flood risk, geomorphology (including the Water Framework Directive (WFD)), water quality (including nutrient impact) and groundwater impacts associated with the Proposed Development. Consideration has been given to potential effects during the construction and operation phases.

13.1.2 Within the historic factory site (i.e., within the former Royal Ordnance Factory (ROF) fence line), all significant sources of contamination have been removed as part of the remediation of the historic factory site. Therefore, specific risks associated with the mobilisation of contaminated substance e.g., soil, during demolition and construction phases will not be significant and this matter is proposed to be scoped out. Further information is provided in **Chapter 17.2.**

13.2 Work Completed to Date

13.2.1 Stantec has been involved in assessing Flood Risk and Drainage at this Site for over 10 years, including in support of the 2017 Planning Consent. As such, a number of reports and assessments have been completed to date. These are listed below:

- Royal Ordnance Factory Puriton TUFLOW Modelling Report (July 2007)
- Royal Ordnance Factory Puriton TUFLOW Modelling Addendum to Technical Modelling Report (October 2007)
- Royal Ordnance Factory Puriton TUFLOW Modelling Addendum NO.2 of Technical Modelling Report (January 2008)
- Huntspill Energy Park Remediation Application – Flood Risk Assessment (October 2011)
- Borrow Pit Angling Club Flood Risk Assessment (October 2012)
- Huntspill Energy Park Remediation Phase 1 Drainage Scheme (March 2013)
- Huntspill Energy Park Flood Risk Assessment (April 2013)
- Huntspill Energy Park Surface Water Management Strategy (April 2013)
- Huntspill Energy Park Addendum to Surface Water Management Strategy (October 2013)
- Huntspill Energy Park Remediation Application Surface Water Management Strategy (October 2013)
- Huntspill Energy Park Remediation Works Drainage Scheme for Plots J-K (January 2014)
- Puriton Solar Farm Drainage Strategy Technical Note (February 2015)
- Huntspill Solar Park Surface Water Management Strategy (December 2015)

- Land at Puriton Abstraction Assets Assessment (March 2018)
- Huntspill Energy Park Tidal Flood Risk Summary Note (June 2018)

13.2.2 It should be noted that whilst many of the findings and conclusions of the Works Completed to Date will inform the assessment undertaken within the ES, these documents were undertaken in relation to the 2017 Planning Consent. Hence, the area assessed by these documents is smaller in extent than the Proposed LDO Area and Proposed Study Area which is to be assessed for this ES. Where relevant, these documents will be referenced and/or updated to reflect this change in assessment area.

13.3 Baseline Conditions

Existing State of the Environment

13.3.1 In addition to previous assessments undertaken at the Site, the following key data sources have been used to inform a description of the current state of the water environment:

- British Geological Survey mapping (BGS, 2021)
- Magic Map (DEFRA, 2021)
- Environment Agency *Flood Map for Planning* (EA, 2021a)
- Environment Agency *Long Term Flood Risk* (EA, 2021b)
- Environment Agency *Historic Flood Map* (EA, 2021c)
- Environment Agency *South West River Basin Management Plan* (EA, 2015)
- Environment Agency North and Mid Somerset Catchment Flood Management Plan (EA, 2012)
- Sedgemoor District Council Level 1 Strategic Flood Risk Assessment (SDC, 2015)
- Sedgemoor District Council *Level 2 Strategic Flood Risk Assessment* (Scott Wilson, 2009)

Surface Water Bodies

13.3.2 In common with much of Somerset the Site is crossed by rhynes (ditches). These provide the existing surface water drainage on Site, eventually discharging into the Huntspill River to the north. Some of these rhynes pass through the Site, conveying flows from the upstream catchment, whilst the rhynes on site discharge into these. Within a spur from the main section of the Site to the Huntspill river is a large system of reed beds which historically provided treatment for the process effluent from the former ROF. However, following cease of operations within the ROF site effluent is no longer discharged into the on-site rhynes or reed beds.

13.3.3 A section of the Huntspill River lies within the Proposed Study Area. The Huntspill River is essentially a large reservoir constructed to provide a water supply to the former ROF. As such, water levels are managed to be 3.5mAOD in the summer and 2.9mAOD in the winter.

13.3.4 All watercourses within the Study Area form part of the North and Mid Somerset Catchment Flood Management Plan (CFMP) (EA, 2012) and South West River Basin Management Plan (RBMP) (EA, 2015).

Environmental Designations and Water Framework Classifications

13.3.5 A small section the Huntspill River falls within the Site at the upper boundary of the reedbed system. This section of the Huntspill River is part of the overall Huntspill National Nature Reserve (NNR). The NNR holds a large stock of coarse fish, is home to otters and is a breeding area for barn owls.

13.3.6 The Huntspill River, approximately 5km downstream of the Site, flows into the Bridgwater Bay NNR and Site of Special Scientific Interest (SSSI), and Severn Estuary Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar Site. The NNR is an internationally important feeding and roosting site for many waterfowl and wading birds. It was also designated as an SSSI as it comprises a succession of habitats ranging through extensive intertidal mudflats, saltmarsh, shingle beach and grazing marsh intersected by a complex network of freshwater and brackish ditches that support the internationally important waterfowl and wader.

13.3.7 The quality of the Huntspill River is monitored by the Environment Agency (EA) against the objectives of the Water Framework Directive (WFD). At the Site, the nearest WFD designated water body is the Huntspill (GB108052021210). This is currently (Cycle 2, 2019) classified as overall Moderate status, with Moderate ecological status and Fail chemical Status. The Site does not currently lie within a WFD groundwater management catchment; therefore, no status is provided regarding groundwater.

Existing Drainage

13.3.8 Five surface water drainage catchments were identified on site as part of the Work Completed to Date to support the 2017 Planning Consent. The majority of the western parts of the Site drained to the “Site Acid Ditch”, although a small section of land on the western boundary and another north-west of centre discharges into the “Black Ditch” which flows westwards before discharging into the Huntspill River. Central areas of the Site drain to a south-to-north rhyne which continues parallel to (but separate from) the reed beds before discharging into the Huntspill River via the “North Water Outfall”. Eastern parts of the site drain north-eastwards to the Stoning Pound Rhyne which ultimately discharges to the Huntspill River. These catchments remain unchanged at present.

13.3.9 While the ROF was operational, effluent was piped or pumped to a large treatment tank in the centre of the Site, known as the “Lido”, and then pumped to the reed beds. The Lido also has an overflow to the Site Acid Ditch. Following passage through the reed beds, treated effluent was pumped into a ditch immediately to the north, which runs west and flows parallel to (but separate from) the Huntspill River and discharges into the Parrett Estuary. This ditch is referred to as the “Acid Ditch”. The Lido and overflow are still in-situ but owing to the ceasing of operations on site, no longer receives effluent discharge, therefore no effluent is discharged into either the Site Acid Ditch or the Acid Ditch and these are now surface water only systems.

13.3.10 The Site Acid Ditch, reed beds and North Water Outfall lie within the Site, whilst the Black Ditch lies on the northern boundary. The Acid Ditch does not lie within the Site.

13.3.11 Consultation with the EA and Somerset Drainage Boards Consortium prior to determination of the 2017 Planning Consent indicated that both parties sought to amend the existing surface water outfall arrangement. It was requested that surface water runoff should be directed through the reed beds and then into the Huntspill River via the North Water Outfall. However, a sweetening flow would need to be preserved in the Acid Ditch to preserve the existing water vole habitat. This has not yet been implemented but the principle will form the basis of any proposed surface water management for the LDO and will represent an alteration to the catchments serving each of the defined outfalls from site.

13.3.12 Following remediation, the existing surface water drainage regime has not been altered from the five catchments identified previously i.e., there has been no removal of rhynes or ditches, no realignment of rhynes or ditches and no new culverts installed.

13.3.13 The existing drainage regime is indicated within **Appendix M.**

Surface Water Abstractions

13.3.14 The Site currently benefits from two surface water abstraction licences that previously served the ROF. One relates to abstraction from the Huntspill River (licence number 16/52/011/048) at a location adjacent to Woolavington Bridge on Woolavington Causeway, the second from the King's Sedgemoor Drain (licence number 16/52/008/S/122) approximately 2km south of the Site.

13.3.15 These licences were issued by the EA and no expiry dates have been identified, both stating that they "shall remain in force until revoked". The purpose of the abstractions is for industrial use and authorised at specific locations on site. There are no seasonal restrictions for these abstractions.

13.3.16 Whilst the licences are for separate surface water bodies and operable independently, Clause 7.2 of the licences defines a maximum aggregate quantity of abstraction from the two sources. The maximum hourly rate of abstraction is not limited, but maximum aggregate abstraction quantities of 6,500m^3/day and 1,000,000m^3/year apply to both licences.

13.3.17 The licence for abstraction from the Huntspill River defines clearly that abstraction can only be undertaken when the water level in the river, as measured at the gauge board adjacent to Gold Corner, is above 2.2mAOD. This is above the maintained water level of 2.9mAOD.

13.3.18 However, the licence for the King's Sedgemoor Drain states that the EA have the right, in the event of a prolonged period of dry weather, to reduce or stop abstraction in the event that the retained water level falls below that necessary for agricultural purposes as agreed between the EA and the Somerset Drainage Boards Consortium or the flow to the tidal estuary over the weirs at Dunball Clyce ceases. This open to variation.

Groundwater Bodies

Geology

13.3.19 Review of British Geological Survey (BGS, 2021 online viewer) mapping indicates that the Site is underlain by bedrock geology of the Langport Member, Blue Lias Formation and Charmouth Mudstone Formation (undifferentiated), which are describe as *"porcellanous limestone below, calcareous mudstone above"*, *"thinly interbedded limestone (laminated, nodular or massive and persistent) and calcareous mudstone or siltstone (local laminated)"* and *"dark grey laminated shales, and dark, pale bluish grey mudstone"* respectively The BGS online viewer also indicates that the Charmouth Mudstone Formation and Langport Member form the upper and lower boundaries to the Blue Lias Formation respectively.

13.3.20 Superficial deposits are indicated to be Tidal Flat Deposits, comprising clay, silt and sand, for the majority of the Study Area. Higher elevations in the southern part of the Study Area do not have superficial deposits recorded.

Hydrogeology

13.3.21 A review of EA mapping (DEFRA, 2021) indicates that the bedrock geology underneath the Site is a Secondary A Aquifer. A Secondary A Aquifer is defined by the EA as "permeable layer capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of baseflow to rivers".

13.3.22 The Tidal Flat Deposits are classified as a Secondary (undifferentiated) Aquifer by the EA (DEFRA, 2021). A Secondary (undifferentiated) Aquifer is defined as “where it has not been possible to attribute either category A or B”.

13.3.23 The Site lies within a Groundwater Vulnerability Zone of ‘Medium – High’ (DEFRA, 2021). ‘Medium’ vulnerability is defined as “areas that offer some groundwater protection”, whilst ‘High’ is defined as “areas able to easily transmit pollution to groundwater… characterised by high leaching soils and the absence of low permeability superficial deposits”.

Groundwater Abstractions

13.3.24 Review of the Environment Agency Source Protection Zone (SPZ) map (DEFRA, 2021) shows that the Study Area does not cover any areas indicated as a SPZ.

13.3.25 Information regarding licensed and non-licensed groundwater abstractions will be obtained through consultation with the EA and Somerset County Council during preparation of the ES.

Flood Risk

Fluvial and Tidal

13.3.26 TUFLOW flood modelling reports and Flood Risk Assessments completed as part of the Works Completed to Date made several assessments of the tidal flood risk, taking account of a potential breach of the existing defences.

13.3.27 The July 2007 TUFLOW modelling report assessed the five flood defence scenarios and determined the following:

- The existing tidal defences provide a 1 in 200-year level of protection from extreme tidal events, except for a few minor places where limited overtopping occurs.
- The present-day 1 in 1,000-year extreme tidal event overtops the defences, but the floodwater is contained within the low-lying area next to the defences.
- The road, railway and motorway provide a significant barrier to inland flow. The ROF site is not affected by tidal flooding, even including for climate change.
- Breaching of the tidal defences would result in more extensive flooding, but the analysis has demonstrated that floodwater would still not reach the Site, even allowing for climate change up to the year 2070.

13.3.28 In October 2007, the EA requested that additional modelling was undertaken for the 1 in 1,000 year (0.1% AEP) extreme tidal level for both present-day and with climate change at the breach location where the most extensive flooding was previously generated. The conclusion remained the same, that the Site would not experience tidal flooding in this scenario.

13.3.29 In January 2008, the modelling was updated to account for potential residential development at the Site. This meant that the development would have a longer design life and therefore the climate change allowances applied needed to be amended. The results show that during the 2110 climate change scenario for the 1 in 200-year event, flooding occurs in the northeast corner of the Site. The 1 in 1,000-year event results in flooding from the northeast of the Site and from the low-lying lands to the west of the Site.

13.3.30 By the time of the October 2011 remediation application Flood Risk Assessment, climate change allowances had been updated. The modelling assessment was updated to account for these as well as increasing the defence breach width from 40m to 50m. The results confirmed

that floodwater will not reach the Site during a breach of the tidal defences coincident with a 1,000-year tide during the period of the remediation works.

This assessment was repeated for the April 2013 Flood Risk Assessment supporting the 2017 Planning Consent on site. The results confirm that during the present-day scenario, floodwater will not reach the Site during a breach of the tidal defences coincident with a 1 in 200-year tide. The TUFLOW model was re-run to consider the predicted effects of climate change up to the year 2075. The modelled results for the 1 in 200-year breach scenario show no floodwater reaching the Site due to the natural protection of the local topography. The modelled results for the predicted 1 in 1,000-year overtopping scenario for the year 2075 show some shallow flooding beginning to encroach into the north-east corner of the Site with a peak water level of 5.06m AOD. The Flood Risk Assessment recommended that building plot platform should be raised to 5.5mAOD where necessary, with Finished Floor Levels to be higher still.

13.3.31 Since the production of the Works Completed to Date, EA climate change allowances for sea level rise have been updated again. As part of the preparation of the ES, an assessment will be made regarding the existing tidal flood risk on site using these updated climate change allowances and will assess the Proposed LDO Area (which is larger than the 2017 Planning Consent boundary).

Flood Risk Mapping

13.3.32 Notwithstanding the above, the EA *Flood Map for Planning* (EA, 2021a) indicates that the majority of the Site is designated as Flood Zone 3, which is defined as land with a 1 in 100 or greater annual probability of fluvial flooding (>1% Annual Exceedance Probability (AEP)) or with a 1 in 200 or greater annual probability of tidal flooding (>0.5% AEP)). The source of this flood risk is identified in the Works Completed to Date as being tidal and not fluvial and does not take account of any existing defences which the Site is indicated to benefit from. These defences are indicated to be embankments along the River Parrett to the west of the site. Practical experience suggests, however, that the Site has never flooded.

13.3.33 Areas of Flood Zone 2 are indicated towards the southern part of the Site, where on site levels begin to rise towards the Polden Hills. The extents of Flood Zone 2 extend slightly further than that of Flood Zone 3. The Flood Zone 2 extents are again indicated to be tidally influenced rather than fluvial and they are defined as land having between a 1 in 200 and 1 in 1,000 annual probability of tidal flooding (0.1-0.5% AEP).

13.3.34 Further south and at higher elevation, the remaining land within the Site is indicated to lie within Flood Zone 1. This is defined as land having a less than 1 in 1,000 annual probability of tidal flooding (<0.1% AEP).

13.3.35 The Works Completed to Date indicated that the Site is located approximately 5km inland from the Parrett Estuary. Between the estuary, the flood defences and the Site, there are three arterial transport routes (the A38, the Taunton to Bristol railway line and the M5 motorway) each constructed on raised embankments above general levels. These will, therefore, serve to impede the propagation of tidal floodwaters and reduce tidal flood risk on site

13.3.36 High water levels within the Huntspill River as a result of tidal flooding could in theory have the potential impact of “tide locking” the existing rhynes and ditches draining the Site. Works Completed to Date indicated that in this unlikely scenario, the raised embankment surrounding the existing reed beds provide sufficient temporary storage capacity to prevent flooding on the Site prior to discharging as tidal water levels recede within the Huntspill River.

13.3.37 Since the production of the Works Completed to Date, EA climate change allowances for sea level rise have been updated. As part of the preparation of the ES, an assessment will be made using these updated climate change allowances.

Surface Water (Pluvial)

13.3.38 The Risk of Flooding from Surface Water (RoFSW) map (EA, 2021b) details that the Study Area is predominantly within an area at very low risk (<0.1% AEP) of surface water flooding.

13.3.39 The RofSW map identifies that some areas in the southeast of the Site have a high risk (>3.3% AEP) of surface water flooding, but these appear to be associated with areas immediately upslope from buildings on site. These buildings have been removed as part of the remediation of the Site, and thus this risk is reduced or removed. Other areas closely associated with existing drainage on site are indicated to have a low risk (between 0.1 and 1% AEP) of surface water flooding. This likely reflects that these areas are localised depressions or channels. The flood risk from these depressions or channels will be assessed as part of the ES.

Groundwater

13.3.40 The Sedgemoor District Council Strategic Flood Risk Assessment (SFRA) Level 1 (SDC, 2015) indicates that in November 2012 high groundwater levels were observed on the Levels and Moors and surrounding villages. This was due to wetter than typical weather between April and October of that year.

13.3.41 The North and Mid Somerset CFMP (EA, 2012) does not identify groundwater as being a significant source of flood risk.

Reservoir

The EA provides mapping that gives an indication of the areas at risk of flooding in the event of a reservoir failure (EA, 2021b). The Proposed Study Area is shown to be outside of flood extents due to this scenario.

Historic Flood Events

The Environment Agency's *Historic Flood Map* (EA, 2021c) identifies the maximum extent of recorded flood outlines from rivers, the sea and groundwater springs. A review of the map identifies no recorded historic flood events within the Proposed Study Area, although the extents do come within approximately 200m of the Proposed Study Area.

13.3.42 The Sedgemoor District Council SFRA Level 1 (SDC, 2015) indicates a number of historic flood events in the area, but not on the Site, which are as follows:

- *"October/November 1960 – prolonged rainfall caused widespread flooding across the Levels and Moors.*
- *December 1981 – very high tidal levels resulted in overtopping of sea defences, inundating approximately 3,570ha.*
- *August 1997 – intense summer rainfall caused significant vegetation damage and pollution on the Levels and Moors.*
- *November 2012* –This was due to wetter than typical weather between April and October of that year. Up to 150mm fell across some areas through late November, leading to extensive flooding and road closures.
- *December 2013 to February 2014 –ffectin* During January, southern England experienced the highest rainfall since records began. The extent of flooding led to a major incident being declared by Somerset County Council*."*

Practical experience on site indicates that it was unaffected in 2012 and 2013-2014. However, the Site is situated in a flood risk sensitive location and this will be assessed further in the ES.

Other Flood Sources

13.4 2032 Baseline Conditions

13.4.1 In addition to the key data sources stated for the current state of the environment set out above, the following documents have also been used to inform a description of the water environment baseline conditions in 2032:

- Documents available for the 2017 Planning Consent; and
- Sedgemoor District Council (SDC, 2019) Local Plan 2011-2032.

13.4.2 Where the 2032 baseline condition remains unchanged from the current state of the environment, this will be clearly set out.

Surface Water Bodies

13.4.3 The 2017 Planning Consent set out that the Site would continue to be drained by a number of rhynes and ditches. The layout and contributing areas of these rhynes and ditches would have been amended to enable the 2017 Planning Consent but would still ensure that any pre-development flows from off-site were accounted for.

13.4.4 Given the Site's location, it is unlikely that any development as allocated within the SDC Local Plan would impact or amend Surface Water Bodies within the Proposed Study Area for the 2032 baseline condition.

13.4.5 Therefore, the 2032 baseline condition of Surface Water Bodies is considered to be the current state of the environment.

Environmental Designations and Water Framework Classifications

13.4.6 It is assumed that Environmental Designations for the 2032 baseline will remain the same as the current state of the environment.

13.4.7 The Huntspill (WFD designation GB108052021210) has an objective to be classified as overall Good status with Good ecological and chemical status by 2027 and will be likely subject to annual testing to monitor progress against achieving this. Reasons for not achieving Good status have been given as poor livestock management and physical modifications undertaking by agricultural/rural land management and local government activities.

13.4.8 It is not possible to predict the status of the Huntspill for the 2032 baseline, however for the purpose of the assessment assuming the Huntspill achieves Good status by 2027 and maintains that to 2032 would form the basis of a conservative approach to assessing impacts. This approach is based on the proposed development being designed to support the objective to improve the status of the Huntspill.

Existing Drainage

13.4.9 In the 2032 baseline, the existing drainage on-site will be as described in the Surface Water Management Strategy and Addendum reports provided as part of the 2017 Planning Consent.

13.4.10 This includes the amendments to the surface water outfall points, as described within the current state of the environment, however this amendment will be considered as part of the 2032 baseline.

13.4.11 In addition to the change of surface water outfalls, the 2017 Planning Consent Surface Water Management Strategy and Addendum reports state that the existing drainage in the 2032 baseline condition would comprise rhynes and ditches realigned in consideration of the development layout. There will also be additional water quality measures, such as SuDS, within the development plots themselves.

Surface Water Abstractions

13.4.12 In the 2032 baseline, the Site will still benefit from the existing surface water abstraction licences from the Huntspill River and King's Sedgemoor Drain. However, the 2017 Planning Consent did not propose utilising these abstractions to supply non-potable water to the Site, therefore for the purpose of the 2032 baseline condition it will be assumed that abstractions from the Huntspill River or King's Sedgemoor Drain no longer take place, despite the licences still being valid.

Groundwater Bodies

Geology

13.4.13 The geology of the Site for the 2032 baseline will remain unchanged and the same as the current state of the environment.

Hydrogeology

13.4.14 It assumed that the hydrogeology of the Site for the 2032 baseline will remain as per the same as the current state of the environment and that no DEFRA or EA designations will have changed.

Groundwater Abstractions

13.4.15 It is assumed that the Site will not be designated as a Source Protection Zone (SPZ) prior to 2032

13.4.16 Information regarding licensed and non-licensed groundwater abstractions will be obtained through consultation with the EA and Somerset County Council during preparation of the ES.

Flood Risk

Fluvial and Tidal

13.4.17 The EA *Flood Map for Planning* (EA, 2021a) does not take account of the effects of climate change. However, as previously mentioned, flood risk on site is predominantly tidally influenced. Utilising the recommended sea level rise allowances within the PPG, an assessment will be undertaken within the ES to determine the likely impact sea level rise will have on the Site for the 2032 baseline scenario, which is estimated to be minimal. Therefore, it is proposed that the current fluvial flood risk will remain the same in the 2032 baseline and information will be provided in the ES as to any impact as a result of sea level rise.

Surface Water (Pluvial)

13.4.18 The RofSW map (EA, 2021b) identifies areas at risk of surface water flooding based on the pre-remediation layout. However, the layout of the site for the 2032 baseline will be that of the

2017 Planning Consent. Owing to the planning requirement to implement a Surface Water Management Strategy to serve the development and manage rainfall on site, it is assumed that surface water flood risk on site for the 2032 baseline scenario will be very low (<0.1% AEP).

Groundwater

13.4.19 Given that the underlying geology and hydrogeology will remain unchanged when compared to the current state of the environment, it is also assumed that the groundwater flood risk in the 2032 baseline will remain the same.

Reservoir

13.4.20 It is assumed that for the 2032 baseline condition, flood risk from reservoirs is to remain unchanged from the current state of the environment.

Historic Flood Events

13.4.21 Given it will not be possible to assess historic flood events in the context of the 2032 baseline for the period between writing the ES in 2021 and 2032 itself, this aspect is not applicable for assessment.

Other Flood Sources

13.4.22 As discussed for the current state of the environment, since the production of the Works Completed to Date EA climate change allowances for sea level rise have been updated. As part of the preparation of the ES, an assessment will be made regarding the existing tidal flood risk (taking account of the A38, M5 and railway embankments) on site using these updated climate change allowances and will assess the Site.

13.4.23 This assessment will also be undertaken for the 2032 baseline. The PPG indicates the anticipated sea level rise that will occur between 2021 and 2032, which will then be used to generate the initial boundary condition for tidal flood modelling to occur. The methodology will be the same as proposed for the updated modelling for the baseline condition, but with an elevated initial boundary condition to represent the 2032 baseline.

13.5 Consultation

13.5.1 Consultation will take place with the following authorities to obtain further information on current conditions and to determine mitigation standards:

- The Environment Agency.
- Somerset County Council, as Lead Local Flood Authority.
- Somerset Drainage Boards Consortium.
- Natural England.

13.5.2 Consultation with the Environment Agency regarding flood risk assessment on site was commenced in March 2021 and is going. In addition, consultation with Natural England regarding the potential impacts of nutrient neutrality was commenced in February 2021 and is also ongoing.

13.6 Potential Effects

13.6.1 The Proposed Development has the potential to impact the water environment arising from a number of direct and indirect sources, during both the demolition and construction, and operation phases. It is likely that without mitigation potential effects could occur.

13.6.2 The following paragraphs provide a list of the potential effects. Following mitigation, it is anticipated that the majority of potential effects will be reduced removed or managed for the benefit for the development. This will be assessed within the ES.

Demolition and Construction

13.6.3 As a result of works undertaken as part of the remediation consent, all demolition within the fence line has already taken place and there is only one building now within the LDO area left to be demolished. Any effects arising from demolition are therefore likely to be minimal.

13.6.4 During the construction period, effects are likely to be temporary for the limited period of the works. During construction, without any mitigation, it is considered likely that there could be potential impacts to surface water and groundwater features as follows:

Surface Water Bodies

- Potential increased physical contamination of surface water runoff from ground disturbances, leading to the potential for increased sediment load in surface water runoff reaching drainage features and surface water features. This will be mitigated through the preparation and execution of a Construction Environmental Management Plan (CEMP) and appropriate sediment strategy.

- Potential increased pollution risks from runoff during construction activities, including the accidental spillage of fuels, lubricants, cements, hydraulic fluids or other harmful substances which may be stored on the Site during the construction phase, and could migrate into surface water bodies. This will be mitigated through the preparation and execution of a CEMP.

- Potential impact to the hydro morphological and ecological quality of watercourses associated with works in close proximity to them; albeit both the CEMP and the Ecological Management Plan (EMP) will provide for appropriate mitigation to limit or negate potential impacts.

Groundwater Bodies

- Potential increased pollution risks from runoff during construction activities, including the accidental spillage of fuels, lubricants, cements, hydraulic fluids or other harmful substances which may be stored on the Site during the construction phase, and could migrate into groundwater bodies. This will be mitigated through the preparation and execution of a Construction Environmental Management Plan (CEMP) and appropriate sediment strategy.

- Potential local groundwater drawdown as a result of temporary de-watering construction control measures. These measures may be required to construct any sub-surface structures, such as cuttings. Drawdown impacts may be experienced in areas outside of the Site (or area(s) requiring the hydraulic control) as a consequence of temporary dewatering activities. Discharge from dewatering may also impact on receiving surface water or groundwater. This is the typical result of such construction activities is temporary in nature and will not have a permanent impact.

Flood Risk

- Temporary introduction of impermeable surfaces to facilitate construction processes could result in an increase in runoff and increased risk of surface water flooding although in this case there are already existing construction roads in place throughout the Site, including a number of hard standings and areas for compounds so any additional temporary impermeable surfaces should have little impact

- Infilling of onsite draining rhynes as part of the landscaping strategy could, without mitigation, increase localised flood risk, however, this will be managed by a Construction Management Drainage Strategy as part of normal practice.

- Potential interception of the groundwater table by cutting activities, including the excavation of materials and construction of below ground structure, potentially altering groundwater flow, and increasing local groundwater flood risk. This is however not seen to be a key issue as this situation will usually normalise. There would, in addition, be a watching brief as part of the Construction Management Drainage Strategy.

13.6.5 The impacts outlined above are typical for a construction site and it is anticipated that mitigation will reduce or remove any impacts as highlighted above.

Operation

13.6.6 During operation, without any mitigation, it is considered likely that the potential impact to surface water features, groundwater features and flood risk could arise from:

Surface Water Bodies

- Potential increased pollution risks from routine runoff during the operational life of the Proposed Scheme, primarily consisting of silts, hydrocarbons and dissolved heavy metals resulting from commercial operations, which may migrate to surface water bodies. This will however, be mitigated and managed as part of the on-site Surface Water Strategy.

- Potential increased pollution risks from accidental spillages. This will however be mitigated and managed as part of the on-site Surface Water Strategy.

- Potential impact of the hydro morphological and ecological quality of water features associated with commercial operations within and in close proximity to water features. This will however be mitigated and managed as part of the on-site Surface Water Strategy.

Groundwater Bodies

- Potential increased pollution risks from routine runoff during the operation life of the Proposed Scheme, primarily consisting of silts, hydrocarbons and dissolved heavy metals resulting from commercial operations, which may migrate to groundwater bodies. This will however be mitigated and managed as part of the on-site Surface Water Strategy.

- Potential increased pollution risks from accidental spillages. This will however be managed as part of the on-site Surface Water Strategy.

Flood Risk

- Potential increased flood risk due to new rhyne and ditch crossings. This will be mitigated by the use of appropriate soffit levels and span.

- Introduction of new impermeable surfaces, leading to potential increased runoff. This will however be mitigated and managed as part of the on-site Surface Water Strategy.

- Interception of overland flows through the introduction of impervious structures on the Site, potentially disrupting local flow routes. This will, however, be mitigated and managed as part of the on-site Surface Water Strategy.

- Potential prolonged interception of the groundwater table by below-ground features e.g., cuttings, resulting in permanent alteration to the groundwater table, including flow patterns and baseflow and increasing local groundwater flood risk. This is however not seen to be a key issue as this situation will usually normalise. There would, in addition, be a watching brief as part of the Construction Management Drainage Strategy.

13.6.7 Scheme design will incorporate measures to manage and mitigate the above potential effects as far as is possible. It is anticipated that the majority will be able to be reduced or removed as part of the ES process.

13.7 Not Significant Effects

13.7.1 Within the historic factory site (i.e., within the former ROF fence line), all significant sources of contamination have been removed as part of the remediation of the site. Therefore, specific risks associated with the mobilisation of contaminated substance e.g., soil, during construction phases will not be significant and therefore this is proposed to be scoped out of the ES.

13.8 Assessment Methodology

Policies and Plans

13.8.1 Planning policies and guidance that are relevant to the Proposed Development include:

- National Planning Policy Framework (NPPF) (2019): Paragraph 8 (Achieving Sustainable Development); and, Paragraph 148, 150, 155 158 159 160 and 161, 163 and 165 (Meeting the challenge of climate change, flooding and coastal change), and the associated Planning Practice Guidance: Flood risk and coastal change (2014), climate change (2019), land affected by contamination (2019), natural environment (2019), and Water supply, wastewater and water quality (2019).

- Sedgemoor District Council (SDC, 2019) Local Plan 2011-2032.

- Environment Agency (EA, 2013) Local Flood Risk Standing Advice for Sedgemoor.

- Environment Agency (EA, 2018) – The Environment Agency's approach to groundwater protection.

- Environment Agency (EA, 2020d) Flood Risk Assessments: Climate Change Allowances.

Approach

13.8.2 The approach to assessment is set out in **Chapter 6**. The assessment will comprise the 2032 baseline (which assumes the 2017 Planning Consent has been constructed, although not the safeguarded uses) will be assessed against the Proposed LDO Development.

13.8.3 The Proposed Study Area includes a 500m buffer surrounding the Site. This buffer is considered a suitable extent to assess direct potential impacts as well as encompassing indirect pathways, such as the migration of surface-borne pollutants, and the effects of any prolonged interception of groundwater flows. The Proposed Study Area also encompasses surface water features, groundwater features and abstractions, located up to a distance of approximately 500m from the Site, that are considered to be in hydraulic connectivity with the Site, to assess potential indirect effects.

13.8.4 The following approach will be adopted for the assessment:

- Review of international, national and local legislation, policies and guidelines in relation to water resources, water quality and flood risk. This will also include a review of the requirements for the WFD.
- Establish current flood risk and hydrology conditions within the Study Area, where indicated.
- Review key findings from supporting documents, such as a Flood Risk Assessment, Surface Water Management Strategy etc. (to be prepared in conjunction with ES).
- Identify the importance of sensitive receptors and likely key issues.
- Identify potential risks to surface water bodies, groundwater bodies and all forms of flood risk from the Proposed Development and hence the likely significant impacts during both the construction and operation phases.
- Recommend appropriate mitigation and assess residual effects. Consider the appropriateness of monitoring measures in respect any likely significant adverse effects.

Methodology

13.8.5 Where the potential for significant environment impacts due to the Proposed Development have been identified, an assessment of the magnitude of the impact will be required. This will be done through a qualitative assessment of the impact, which will consider the following:

- The nature of the change – change in quantity (e.g., rate of discharge) or quality (e.g., river water quality).
- The direction of the change – an increase or decrease (quantity) or improvement or deterioration (quality).
- The temporal nature of the change – a change that will occur immediately or gradually over time, for a limited period of time or permanently.
- The spatial nature of the change – location(s) as to where the change will occur.
- The scale of the change – based on scientific and technical understanding of policy and the expected project outcomes (e.g., whether marginal or non-marginal compared to baseline).

13.8.6 Following the qualitative assessment of the impact, its magnitude will be categorised as shown in **Table 13.1** below:

Table 13.1: Flood Risk & Drainage Magnitude of Impact

Magnitude	Criteria for Assessing Impact
Large	Results in a loss/gain of attribute and/or quality and integrity of the attribute. Following development, the baseline situation is fundamentally changed.
Medium	Results in impact on integrity of attribute and/or loss/gain part of the attribute, following development, the baseline situation is noticeably changed.
Small	Results in some measurable change in attribute's quality or vulnerability. Following development, the baseline situation is largely unchanged with barely discernible differences.
Negligible	Results in no change to attribute. Baseline situation is maintained following development.

13.8.7 The sensitivity of a receptor is based on the relative importance of the receptor, as shown in **Table 13.2** below

Table 13.2: Flood Risk & Drainage Sensitivity of Receptor

Sensitivity	Receptor Type
High	Receptor has little ability to absorb change without fundamentally altering its present character or is of international or national important.
Medium	Receptor has moderate capacity to absorb change without significantly altering its present character.
Low	Receptor is tolerant of change without detriment to its character or is of low or local importance.
Negligible	Receptor is not sensitive to impact or risk.

13.8.8 The sensitivity of humans will depend on the nature of their presence on site. Where humans are present as part of their occupation e.g., within the proposed commercial/industrial areas, their sensitivity will be lower as it is unlikely that overnight stays will occur, and these people can refrain from entering the area where they are at risk. For those that reside on site permanently, the sensitivity will be considered to be higher.

13.8.9 The significance of the impact is then determined by the interaction of magnitude of impact and sensitivity of receptor, as set out in **Table 13.3** below:

Table 13.3: Flood Risk & Drainage Impact Significance

Magnitude	Sensitivity			
	High	**Medium**	**Low**	**Negligible**
Large	Substantial	Major	Moderate	Negligible
Medium	Major	Moderate	Moderate	Negligible
Small	Moderate	Moderate	Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

13.8.10 The methodology set out in above will be first applied to both the construction and operation phases of the Proposed Development, including any Embedded Mitigation but without Further Mitigation. Where the significance of impact indicates that Further Mitigation will be required, the ES will state what Further Mitigation will be provided and will reassess the significance of impact with the Further Mitigation in place. Consideration will be given to the appropriateness of monitoring measures in respect of likely significant adverse effects.

13.9 Limitations and Assumptions

- The assessment of potential effects will be based on Parameter Plans for the Proposed Development. Details regarding the proposed design of drainage and mitigation measures, for instance, have not been identified in advance of preparing this scoping report.

- Many of the identified risks during construction and operation will be dependent on the baseline and proposed surface water drainage systems. This information will be used to inform the detailed assessment of risks associated with water quality and increased flood risk within the ES.

- Information regarding existing flood risks at this stage has been obtained from desk-based sources. Further analysis using site specific data, such as through consultation and updated tidal flood modelling, will be undertaken as part of the ES. This will enable a better understanding the potential risks posed by the Proposed Development including potential impacts to the environment, people and existing property and infrastructure.

- Furthermore, as the 2032 baseline lies within the future at the time of preparing this scoping report, there is a limitation regarding the prediction of the water environment at this time.

- At present fluvial flood risk is based on the EA's *Flood Map for Planning* (EA, 2021a). Whilst this provides flood risk associated with Main Rivers, the risk of flooding from ordinary watercourses (such as the on-site rhynes) has not been accounted for. Such risks are unlikely to be determined without specific modelling by the local authority, however the *Risk of Flooding from Surface Water Map* (EA, 2020b) is considered to give a reasonable representation of the risk and enable an assessment to be made for the ES.

- Water quality sampling is not proposed to be undertaken. The assessment in the ES will be based on a combination of qualitative professional judgement and quantitative data and consultation with relevant statutory and non-statutory organisations.

- It is considered that it will be possible to undertake a robust assessment in the ES, despite the limitations and assumptions identified above.

13.10 References

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Sedgemoor District Council (SDC) (2015) Level 1 Strategic Flood Risk Assessment [Online] Available at https://www.sedgemoor.gov.uk/sfra [Accessed February 2021]

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14 Landscape and Visual

14.1 Introduction

14.1.1 This chapter of the ES will be produced by The Richards Partnership, an established firm of Chartered Landscape Architects with considerable experience in landscape and visual impact assessment.

14.1.2 The Landscape and Visual Impact Assessment (LVIA) will examine the existing state of the environment in relation to landscape and visual baseline conditions within and around the Site, and evaluate its broader context with reference to landscape and visual receptors that may be affected by the Proposed Development. It will consider how the existing state of the environment will evolve to a 2032 baseline. It will then use this 2032 baseline to consider the potential effects arising from the construction and operation of the Proposed Development, and where 'significant' effects cannot be avoided through design, will recommend mitigation measures.

14.1.3 In order to avoid repetition, a general description of the Proposed Development, Site and surroundings is provided in the introductory chapters of this Scoping Report.

14.2 Work Completed to Date

14.2.1 The Richards Partnership have been involved in projects on this Site since 2007 and wrote the Landscape and Visual Impact chapters for the following documents:

- The Environmental Statement submitted with the 2013 planning application in April 2013 (the '2013 ES');
- The Environmental Statement Update Submission in October 2013 (the '2013 ES Update'); and
- The ES Addendum submitted in June 2017 (the '2017 ES Addendum') and the '2017 LVIA'.

14.3 Baseline Conditions

14.3.1 To determine the landscape baseline, the first stage of the assessment is to identify the key features of the local landscape and to define landscape character (the distinct and recognisable patterns of elements, or characteristics that make one area different from another). This process will be informed by local landscape designations within the study area, and sources examined for this desktop study include:

- Local Planning Policy (Adopted and Emerging) and associated evidence base;
- Landscape and Heritage Designations;
- Natural England's National Character Area Profiles;
- District and Local Level Character Areas;
- Somerset and Exmoor National Park Historic Landscape Characterisation Project 1999-2000;
- Public Rights of Way;

- Local OS Maps; and
- Satellite Images.

14.3.2 Subsequently field study work has been undertaken in February 2021 to review the existing state of the environment with regards to landscape character and visual amenity and record any changes since the 2017 LVIA. The Site boundary has been amended since the 2017 LVIA and as a result the Site is slightly larger in area. There has also been considerable progress with the remediation works on the Site. In addition, the road access to the A39, and its landscape bund, is predominantly complete at the time of writing. The road access will therefore be considered as part of the baseline for the LVIA. With planting due in autumn/winter 2021, effects due to planting works (which are likely to be beneficial in nature) will be considered within this scenario. Photographs from all selected viewpoints were updated in late winter/early spring 2021 to record the existing state of the environment when the vegetation is out of leaf and will again be updated in the summer of 2021 when the vegetation is in leaf. The purpose of the site visits are as follows:

- Confirm status of the existing state of the environment identified by the desktop studies;
- Establish the content and quality of the Site's existing landscape features;
- Establish the character of the Site and its immediate environs;
- Consider the Site's visual relationship with its surroundings and visual envelope;
- Consider the contribution of the Site to the wider landscape; and
- Consider the receptors most likely to be affected by development on all or part of the Site.

14.3.3 As noted in **Chapter 5**, the EIA will assess the likely significant effects of the Proposed Development using a 2032 Baseline. Current conditions will therefore be taken forward to incorporate the extant permission for the HEP (but not safeguarded uses), approved developments and likely trends between the existing state of the environment and 2032.

14.3.4 The Strategic Landscape Masterplan (dated June 2020) has been approved, and therefore this will be included as the 2032 baseline.

14.3.5 As a result of the baseline analysis to date, and an understanding of the nature and scale of the Proposed Development, as well as the likely extent and distribution of potentially significant effects, the assessment defined the appropriate extent of the study area.

The Site and Its Surroundings

14.3.6 A full Site description is included at **Chapter 3. Chapter 2** provides a description of the Site's history as well as its current, remediated, condition.

14.3.7 The Site contains a number of mature trees, hedgerows and blocks of woodland which will be the subject of an Arboricultural Survey to BS 5837.

14.3.8 The consideration of trees and hedgerows will be addressed by means of an Arboricultural Health and Conditions Survey which will be included as an appendix to the Landscape and Visual ES chapter. The Arboricultural surveys will inform and advise the master planning by providing advice on the physiological and structural condition of the trees.

Landscape Character

14.3.9 In terms of landscape character this former industrial site is something of an anomaly in the wider rural, Somerset landscape.

14.3.10 Within the Sedgemoor Landscape Assessment and Countryside Design Summary – Revised Edition 2003 the site falls within three separate character areas as follows, all of which will be considered within the assessment:

- Character Area 'Levels and Moors' sub area 'Levels' (broadly the former ROF site);
- Character Area 'Lowland Hills', sub area 'Polden Hills (broadly land along Woolavington Road and the new Gravity Link Road); and
- Character Area 'Levels and Moors', sub area 'Clay Moors' (the northernmost part of the reed bed connecting with the Huntspill River).

14.3.11 In accordance with good practice and in order to facilitate the consideration of potential changes to landscape character at a detailed scale, a number of local landscape character areas were identified during field study work. These areas are illustrated on Figure 15.1 Local Landscape Character Areas within **Appendix N.**

Visual Amenity and Views

14.3.12 In accordance with GLVIA 3, Chapter 6, Paragraph 6.19, viewpoints selected/proposed fall into the following three groups:

- **Representative Viewpoints -** Viewpoints selected to represent the experience of different types of visual receptors, when it would not be appropriate, or proportional, for large numbers of viewpoints to be included individually and where significant effects are unlikely to differ — for example the views of users of particular Public Rights of Way (PRoW); and The views of users of a particular road.
- **Specific Viewpoints:** Viewpoints chosen because they are 'key' and sometimes promoted viewpoints within the landscape, including, for example, specific local visitor attractions, viewpoints in areas that are particularly noteworthy visually and/or recreational amenity locations such as landscape with statutory designations or viewpoints with particular cultural landscape associations.
- **Illustrative Viewpoints:** Viewpoints chosen specifically to demonstrate a particular effect or specific issues, which might, for example, be the restricted visibility of certain locations.

Proposed Viewpoints

14.3.13 The viewpoints shown on accompanying Figures 15.4-15.22 within **Appendix N** will form the basis of the visual assessment. The views from these locations will be illustrated within the LVIA by the use of annotated panoramic photographs and these will allow the assessment of the likely effects on visual receptor groups which in this case are:

- Representative Viewpoints A & B: Motorists on M5 and motorists and pedestrians on Batch Road to the west of the Site;
- Representative Viewpoint C: Motorists on the new Link Road/motorists on Woolavington Road;
- Representative Viewpoint D: Motorists on Woolavington Road;

- Representative Viewpoints E & F: Motorists on the Causeway and walkers at the Causeway Car Park;
- Representative Viewpoint G: Residents in and around East Huntspill
- Representative Viewpoint H: Walkers on Footpath BW 28/2 and residents at the eastern edge of Puriton;
- Representative Viewpoint I: Walkers and horse riders on Bitham Lane bridleway (no. BW 28/1) along the Polden Hills Ridge;
- Representative Viewpoint J: Motorists and pedestrians on Hillside;
- Representative Viewpoint K: Motorists, walkers and residents of Woolavington;
- Representative Viewpoint L: Residents and motorists on the A39 and New Link Road;
- Representative Viewpoints M: Motorists on Bristol Road and residents of Pawlett;
- Representative Viewpoint N: Walkers/Bird Watchers in Steart (England Coast Path/River Parret Trail Long Distance Trail No BW25/3);
- Representative Viewpoint O: Walkers on Lydeard Hill within the Quantock Hills AONB;
- Illustrative Viewpoint P: People to the south of the Polden Hills (including residents, motorists, walkers);
- Representative Viewpoint Q: Walkers on Cross Plain within the Mendip Hills AONB; and
- Specific Viewpoint R: Walkers on Brent Knoll.

14.4 Consultation

14.4.1 A video conference call was held with Sedgemoor District Council's (SDC) Landscape Officer on 22nd February 2021 in which the proposed Landscape and Visual Receptors included in this scoping report were presented and discussed. The Landscape Officer verbally agreed these locations/receptors, but requested Viewpoint L on the A39, be locally adjusted to allow a clearer view towards the main body of the Site. It was also agreed that the viewpoint from Glastonbury Tor could be scoped out of the assessment, and that the updated photography would be undertaken during February/March 2021.

14.4.2 SDC has confirmed that there are approved developments nearby. These will be considered within the LVIA as part of 2032 baseline scenario.

14.5 Potential Significant Effects

Construction

14.5.1 During the construction period, effects are likely to be temporary and are generally adverse in nature for the limited period of the works. Given the nature of the Proposed Development, it is anticipated that construction effects could be long term albeit temporary, the following effects may be experienced;

- Removal of existing landscape features (including vegetation, fields, rhynes, etc,)
- Views of machinery and equipment including tall cranes;

- Noise and views of construction equipment moving on Site;
- Views of construction traffic entering and leaving the Site;
- Temporary disruption to Public Rights of Way (ongoing in the case of the Gravity Link Road – no other PROW is anticipated to be affected); and
- Changes to the immediate local landscape character.
- Views of materials storage areas/earthworks

14.5.2 These effects would primarily be experienced by local residents on the edge of both Puriton and Woolavington, walkers close to the Site, and motorists on the surrounding road network, particularly those using Woolavington Road.

14.5.3 There is potential for significant adverse effects during construction on the following:

- On local landscape character, as areas within the Site would undergo an 'intensive change over a limited area' for the duration of the works; and
- On visual amenity as the construction of the Proposed Development would potentially be visible to all visual receptors. For those receptors within immediate locality these have the potential to be significant, however with distance the effects would diminish. While the construction works would theoretically be visible from the more distant viewpoints within the Quantock and Mendip AONB, they would be difficult to pick out with the naked eye.

14.5.4 There is the potential for likely significant effects on landscape character within the site itself, and the landscape along the northern flank of the Polden Hills.

14.5.5 There is the potential for likely significant visual effects to be experienced by the residents of Puriton and Woolavington, those travelling between the two villages along Woolavington Road, motorists on the Causeway and walkers and riders on the Polden Ridge.

Operation

14.5.6 Following completion of the construction works, effects are likely to be long term and may be positive, adverse or neutral in nature. It should be re-iterated that this assessment will consider the potential effects of development against the 2032 baseline. At year 1 (anticipated to be in 2032), any proposed planting would be small and may not have achieved its full design potential. However, over time with the growth of vegetation and weathering of the Proposed Development, the design should achieve its design aspirations and screening potential. Thus a 15-year post-completion assessment will also be undertaken. It should be noted, given the potential large scale of the buildings, the effects experienced at Year 1 may remain in the long term for many receptors. Long term effects may include the following:

- Views of new large-scale buildings and residential properties, roadways and green infrastructure;
- Changes to landscape features on the Site; and
- Changes to the immediate local landscape character.

14.5.7 There is potential for significant effects during operation on the following:

- On local landscape character, as areas within the Site would undergo an intensive change;

- On visual amenity as the Proposed Development would potentially be visible to all visual receptors. For those receptors within the immediate locality these have the potential to be significant, however with distance the effects would diminish. While the proposed development would theoretically be visible from the more distant viewpoints within the Quantock and Mendip AONB, they would ordinarily be difficult to pick out with the naked eye;

- There is the potential for likely significant effects on landscape character within the site itself, and the landscape along the northern flank of the Polden Hills; and

- There is the potential for likely significant visual effects to be experienced by the residents of Puriton and Woolavington, those travelling between the two villages along Woolavington Road, motorists on The Causeway and walkers and riders on the Polden Ridge.

14.6 Not Significant Effects

14.6.1 With distance from the Site, the landscape and visual effects would be anticipated to diminish. While the proposed development would theoretically be visible from the more distant viewpoints within the Quantock and Mendip AONB, they would ordinarily be difficult to pick out with the naked eye. However, the effects from the AONB will be assessed in the ES, as set out below.

14.7 Assessment Methodology

14.7.1 The methodology for undertaking the LVIA will follow the guidelines set out in Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA 3) (2013). This forms the basic approach and will be amended as necessary to cover any specific site issues.

14.7.2 Additional guidance is taken from, but not limited to, the following publications:

- An Approach to Landscape Character Assessment – October 2014. Christine Tudor;

- Landscape Institute Technical Advice Note 01/2017 (Revised): Tranquillity – An Overview, March 2017; and

- Landscape Institute TGN 06/19 Visual Representation of Development Proposals.

Scope of Assessment

14.7.3 The assessment stage of the LVIA will be to describe and assess the impact of the Proposed Development against the 2032 baseline resulting in:

- Landscape effects; derived from changes in the physical landscape, which may give rise to changes in its character and how this is experienced. This may, in turn, affect the perceived value ascribed to the landscape.

- Visual effects; related to the changes that arise in the composition of available views as a result of changes to the landscape, to people's responses to the changes, and to the overall effects on visual amenity value of the views from surrounding uses.

Identifying Landscape and Visual Receptors

14.7.4 The landscape and visual receptors have been selected based on those identified for the '2013 ES' and the '2017 ES Addendum' They have been locally adjusted in places in order to

record changes in the state of the environment since that time and anticipated changes in baseline conditions to 2032.

14.7.5 Once fixed parameters are available, a 'bare earth' Zone of Theoretical Visibility Study (ZTV) will be run to ascertain if the predicted visual envelope of the Proposed Development has changed and additional viewpoints may be added if deemed appropriate.

14.7.6 In order to facilitate the consideration of potential changes to landscape character at a detailed scale, a number of local landscape character areas were identified during field study work. Similarly, these have been largely based on the Local Landscape Character Areas identified for the '2013 ES' and the '2017 ES Addendum', with adjustments to record localised changes in the state of the environment since that time.

Assessment of Landscape and Visual Effects

14.7.7 The proposed LVIA methodology including the scales used for assessing value and susceptibility to change to identify the likely sensitivity of receptors is derived from GLVIA3 and is largely the same as that used in the 2017 assessment, with some adjustments to reflect the changes in published guidance and updated to current best practice.

14.7.8 The assessment of the significance of landscape and visual effects as defined in paragraph 3.23 in GLVIA 3 "… an evidence-based process combined with professional judgement. It is important that the basis of such judgements is transparent and understandable, so that the underlying assumptions and reasoning can be understood by others" (LI and IEMA, 2013). Levels of landscape and visual effects are determined by consideration of the 'sensitivity' of each receptor or group of receptors and the nature or 'magnitude' of the effect that would result from the proposed development.

14.7.9 The assessments reported in the LVIA represent the culmination of an iterative design and assessment process and therefore relate to the remaining residual effects that could not otherwise be mitigated or 'designed out'.

Defining Receptor Sensitivity

14.7.10 The sensitivity of receptors is derived from a combination of their susceptibility to the specific change brought forward by the proposed development (determined at the assessment stage), and their value (determined at the baseline stage).

14.7.11 The value of landscape receptors or viewpoints will be considered in line with the criteria identified in **Tables 14.1 and 14.2** below:

Table 14.1: Landscape Receptor Value Criteria

Value		Explanation
Very High	Elements	Landscape with highly valued physical attributes/elements (e.g., mature trees and woodlands), possibly rare, in good condition, which makes a strong positive contribution to the landscape character and sense of place and which would not be replaceable.
	Character	Highly valued landscape in good condition which makes a strong positive contribution to the landscape character over a wide area and which would not be replaceable.

		Highly valued landscape which makes a very important contribution to/plays a strong role in the approach to and/or setting of a designated and/or recognised historic settlement or heritage asset.
	Designation	Landscapes with characteristics and attributes that have been identified as of national significance. Landscapes which may be recognised through formal designation e.g., World Heritage Sites, National Parks, Areas of Outstanding Natural Beauty (AONBs) or containing attributes of these recognised landscapes. Areas of recognised high cultural and/or historic value.
High	Elements	Landscape with highly valued physical attributes/elements (e.g., mature woodlands and/or trees) in fair condition or moderately valued elements (e.g., trees that contribute less positively to the local landscape) in good condition that make a positive contribution to local character and sense of place and that would take some considerable time to replace.
	Character	Highly valued landscape in fair condition or moderately valued landscape in good condition which makes strong positive contribution to landscape character and could be replaced and/or mitigated within medium to long term. Landscape which makes some positive contribution to landscape character and would take considerable time to replace and/or would be likely to be adversely affected, by the type of change being proposed. Highly valued landscape which makes an important contribution to/plays a strong role in the approach to and/or setting of a recognised historic settlement or heritage asset.
	Designation	Landscapes with characteristics of national, or regional significance, not in the highest condition. Areas of recognised cultural and/or historic value.
Medium	Elements	Commonplace, moderately valued landscape elements and features in fair condition which make some positive contribution to the landscape character and sense of place. Elements are replaceable but maturity would take some time e.g., trees that contribute less positively to the local landscape or hedgerows that contribute to the area but could be replaced over time.
	Character	Moderately valued landscape in fair condition which makes some positive contribution to the local landscape character. Elements are replaceable but their replacement would take some time. Valued landscape which makes a moderately important contribution to/plays a moderate role in the approach to and/or setting of a settlement or heritage asset.

	Designation	Landscapes with characteristics and attributes which have been identified to be of regional or local significance and are in good condition. These landscapes may be recognised through formal local authority designation or contain attributes of similar locally designated landscapes. Areas with some features of cultural and/or historic value.
Low	Elements	Commonplace landscape elements of limited/low value which are in poor condition but still make a moderate contribution to the site but not the wider landscape. Elements that would be easily replaceable e.g., a gapped hedgerow or a hedge that would easily be replaceable.
	Character	Landscape elements of moderate local value which make a limited/focused contribution to a relatively small landscape/area or landscape elements of limited/low value in a poor condition, but which nevertheless could be treated such that they would make a positive contribution to the surrounding landscape e.g., broken or gapped hedgerows in larger networks of fields and hedgerows but would be filled and integrity retrieved. Landscape which makes a minor contribution to/plays some role in the approach to and/or setting of a settlement or heritage asset.
	Designation	Landscape/features valued at a community level, perhaps through their contribution to setting or their recreational value, but not necessarily recognised through any formal designation. Areas with few features of cultural and/or historic value.
Very Low	Elements	Landscape elements of low value and in a poor condition that make little contribution to the site and the surrounding landscape. Features and elements that are incongruous, derelict or in decline, resulting in indistinct character with little or no sense of place.
	Character	Landscape elements of limited/low value which may be in poor condition and do not contribute notably to the surrounding landscape. Elements would be easily replaceable. Landscape does not make a contribution to/play a part in the approach to and/or setting of a settlement or heritage asset.
	Designation	Landscapes not covered by a local or national designation for landscape with very few locally valued features present Areas with few, if any, features of cultural and/or historic value.

Table 14.2: Viewpoint Value Criteria

Value	Explanation
Very High	Views of landscape recognised for its intrinsic qualities and scenic beauty, likely to be internationally or nationally designated, or heritage assets where visual setting is key. Views from popular viewpoints, e.g., hillforts, look-out points. Views may be recognised or referred to in guidebooks, maps or references to the view/landscape in literature and art. Views with few overt or intrusive or detracting elements in the view.
High	May include views of landscapes which are nationally or locally designated for their various qualities and scenic beauty, but the view may include some manmade detracting elements. View may include heritage assets where visual setting is a consideration. May include views from designated/national trails or named recreational paths. Views may be recognised or referred to in local guidebooks and local literature.
Medium	Views valued at regional or local level, which may be recognised in local guidebooks/tourist maps or referred in local literature. A view with some scenic quality (this may include views across or within a locally designated landscape) There are some overt intrusive manmade elements in the view.
Low	A view with low scenic quality. There may be a number of overt or intrusive human elements already in the view. Unlikely to be recognised through local designation or appear in local guidebooks/ tourist maps & guides.
Very Low	A view with low scenic quality. Likely to be views which are transient or within a degraded landscape and there are existing degraded elements in the landscape. Not situated with or alongside an area designated for its landscape character or visual amenity and with no recognition in local guidebooks/tourist maps & guides.

14.7.12 The susceptibility of a landscape receptor is defined as its susceptibility to accommodate the proposed type of development. Any ‘inherent’ or ‘intrinsic’ sensitivities ascribed to a particular landscape through designation or characterisation will not have accounted for a specific type of development. The professional judgement about the susceptibility of the receptor to the specific change will be recorded in the text.

14.7.13 The susceptibility of a visual receptor to the change in a view is a result of their occupation or activity combined with the extent to which their attention is focussed on the view. The table below sets out the considerations which may be taken into account when assessing susceptibility. The professional judgement applied will be clearly outlined in the text. The susceptibility to change of landscape receptors or viewpoints will be considered in line with the criteria identified in **Tables 14.3 and 14.4** below:

Table 14.3: Landscape Susceptibility Criteria

Susceptibility	Explanation
Very High	The receptor is unable to accommodate the type of development proposed without undue negative consequences to the 2032 baseline situation. Attributes that make up the character of the landscape offer very limited opportunities for accommodating the change without those key characteristics being detrimentally altered. Key landscape elements and/or characteristics that would be adversely affected by the type of development that is proposed and would not be able to be replaced or would take a considerable time to replace (e.g., Mature trees/woodland).
High	The receptor would have difficulty in accommodating the type of development proposed without undue negative consequences to the 2032 baseline situation. Attributes that make up the character of the landscape offer limited opportunities for accommodating the change without those key characteristics being detrimentally altered. Key landscape elements and/or characteristics that would be adversely affected by the type of development that is proposed and would take a considerable time to replace (e.g., Mature/semi mature trees/woodland).
Medium	The receptor is partly able to accommodate the type of development proposed without undue negative consequences to the 2032 baseline situation. Attributes that make up the character of the landscape offer some opportunities for accommodating the change without those key characteristics being detrimentally altered. Key landscape elements and/or characteristics that would be adversely affected by the type of development that is proposed but could be replaced over time. (e.g., young trees/woodland).
Low	The receptor is more able to accommodate the type of development proposed without undue negative consequences to the 2032 baseline situation. Attributes that make up the character of the landscape are resilient to being changed whilst other elements in the landscape may benefit from change where these are at contrast to the existing general landscape character. Key landscape elements and/or characteristics that would be adversely affected by the type of development that is proposed but would be replaceable in the short to medium term. (e.g., Recently planted trees/hedgerows).
Very Low	The receptor is able to accommodate the type of development proposed without undue negative consequences to the 2032 baseline situation. Attributes that make up the character of the landscape are resilient to being changed whilst other elements in the landscape may benefit from change where these are at contrast to the existing general landscape character. Key landscape elements and/or characteristics that would be adversely affected by the type of development that is proposed and would be easily replaceable (e.g., Features in very poor condition).

Table 14.4: Susceptibility of Visual Receptors Criteria

Susceptibility	Explanation
Very High	Viewers whose occupation or activity is such that the view being experienced is likely to be the focus of their attention or interest: and Viewers with prolonged viewing opportunities. Examples may include residents whose outlook forms a key component of their day to day lives, or visitors to attractions known for their particular views or visual setting.
High	Viewers whose occupation or activity is such that the view being experienced is likely form a point of interest: and Viewers whose viewing opportunity may be 'broken' or interrupted. Examples may include local residents, visitors to recognised attractions or those using recognised scenic routes.
Medium	Viewers with a moderate awareness of their surroundings and whose occupation is such that while they may appreciate the view, it would not be fundamental to the satisfaction of the viewers' activity. Examples may include those using local footpaths, transport routes, residents with views from rooms not normally occupied during waking hours.
Low	Viewers with a passing awareness of and limited interest in their surroundings, and for whom the view is likely to play a minimal role to the satisfaction of their occupation or activity; and Views which are incidental to the activities of the visual receptors. Examples may include people at their place of work, those engaged in outdoor recreation that does not depend on appreciation of the view or those travelling at speed.
Very Low	Viewers with a minimal awareness of or interest in their surroundings, and for whom the view is unlikely to play any meaningful role in their occupation or activity. Such views are likely to only be incidental to those activities taking place. Examples may include people at their place of work whose attention may be focused on their work or activity and not on their surroundings.

14.7.14 Landscape and visual sensitivity are assessed through *'combining judgements of their susceptibility to the type of change or development proposed and the value attached to the landscape'* (GLVIA 3 para 5.39). **Table 14.5 and 15.6** below sets out typical examples. The application of professional judgement regarding the sensitivity of the landscape receptors will be clearly outlined within the assessment.

Table 14.5: Landscape Sensitivity Criteria

Sensitivity	Typical Examples
Very High	Highly valued landscapes, which by their nature would be unable to accommodate the type of change proposed. Typical examples may be: • Landscapes of national significance, likely to be recognised through formal designation e.g., World Heritage Sites, National Parks, Areas of Outstanding Natural Beauty (AONBs) or containing attributes of these recognised landscapes; • Landscape~~s~~ with highly valued physical attributes/elements and/or characteristics possibly rare, in good condition which make a strong positive contribution to the landscape character and sense of place and could not be replaced or would take some considerable time to replace e.g., mature woodlands or trees; • Areas of special recognised value through use, perception or historic and cultural associations; and • Highly valued landscapes which makes a very important contribution to/plays a strong role in the approach to and/or setting of a designated and/or recognised historic settlement or heritage asset.
High	Highly valued landscapes, which by their nature would be less able to accommodate the type of change proposed. Typical examples may be: • Landscapes of national or regional significance, not in the highest condition, which may to be recognised through formal designation e.g., National Parks, AONBs Local Landscape Designation or containing attributes of these recognised landscapes; • Highly valued landscape with some demonstrable physical attributes/elements and/or characteristics (mature woodlands and/or trees) in fair condition or moderately valued elements (e.g., trees that contribute less positively to the local landscape) in good condition that make a positive contribution to local character and sense of place and that would take some considerable time to replace; • Areas of special recognised value through use, perception or historic and cultural associations; and • Highly valued landscapes which makes an important contribution to/plays a strong role in the approach to and/or setting of a recognised historic settlement or heritage asset.

Medium	Landscapes, which by their nature would be partly able to accommodate the type of change proposed. Typical examples may be: • Landscapes which are unlikely to be nationally designated, but may be locally designated; • Moderately valued landscape with relatively few physical attributes/elements and/or characteristics which lift the landscape above the ordinary. The elements/ characteristics are in in fair condition, which are replaceable, but this may take some time; • Areas containing some features of value thorough use, perception or historic and cultural associations; and • Valued landscapes which make a moderately important contribution to/plays a moderate role in the approach to and/or setting of a settlement or heritage asset.
Low	Landscapes, which by their nature would be more able to accommodate the type of change proposed. Typical examples may be: • Landscapes which are unlikely to be designated; • Landscape with commonplace elements/characteristics in poor condition, which may be easily replaceable or repaired; • Areas containing few, if any, features of value through use, perception or historic and cultural associations; and • Landscapes which make a minor contribution to/plays some role in the approach to and/or setting of a settlement or heritage asset.
Very Low	Landscapes, which by their nature would be able to accommodate the type of change proposed. Typical examples may be: • Landscapes which are not designated; • Landscapes with elements/characteristics in poor condition and may be discordant, derelict or in decline and which may be easily replaced; • Areas containing few, if any, features of value through use, perception or historic and cultural associations; and • Landscapes which do not make a contribution to/play a part in the approach to and/or setting of a settlement or heritage asset.

Table 14.6: Visual Sensitivity Criteria

Sensitivity	Explanation
Very High	Viewers who are very sensitive/highly attuned to their surroundings with a prolonged intact viewing opportunity of the landscape. Views are likely to be of internationally or nationally designated landscapes or heritage assets. Views may be recognised in art or literature and noted in guidebooks: Examples may include: • Visitors to recognised viewpoints/look-out points such as hillforts; • Visitors to heritage assets of which visual setting is a key component; • Walkers/Riders using national trails through nationally designated landscapes; • Motorists using recognised 'scenic' routes; and • Residents whose properties have been orientated to take advantage of a view, and/ or for whom the view comprises a key component of their daily lives.
High	Viewers who are highly attuned to their surroundings but their interest and viewing opportunity may not be prolonged but broken or interrupted. Views may be of nationally or locally designated landscape or of heritage assets and may be noted in local guidebooks and recognised in art and literature. Examples may include: • Walkers/Riders using national trails or popular footpaths/Bridleways; • Visitors to some heritage assets; • Motorists travelling through high quality landscapes; and • Local residents who may be able to see the view from rooms normally occupied during waking hours.
Medium	Viewers with a moderate awareness of their surroundings and whose occupation is such that while they may appreciate the view, it would not be fundamental to the satisfaction of the viewers' activity. Views may be of a locally designated landscape or a heritage asset, but it is unlikely to figure in guidebooks, art or literature. Examples may include: • Less well used public footpaths/bridleways; • Travellers on local roads through a moderate quality landscape; and • Local residents with views from rooms not normally occupied during waking hours.

Low	Viewers with a passing awareness and limited interest in their surroundings. Views unlikely to be of designated landscape or noted in guidebooks, art or literature. Views may have a number of overt or intrusive elements. Examples may include: • People engaged in outdoor recreation/sport which does not depend upon the appreciation of the view; • People at their place of work; and • Travellers on fast moving roads.
Very Low	Viewers with a passing awareness and limited interest/focus in their surroundings. Views not designated or noted in guidebooks, art or literature. Views of a degraded landscape with a number of overt or intrusive elements: Examples may include: • People at their place of work; and • Travellers on fast moving roads with only transient views.

Magnitude of Effect

14.7.15 Effects may be beneficial, neutral (no change), or adverse, direct, indirect or secondary, cumulative, permanent or temporary, or extending over different time frames (short, medium or long term). They can also arise at different scales, (local, district, county, regional or national) and have different levels of significance (Substantial through to Negligible/No Effect).

14.7.16 The assessment of effects aims to:

- Identify logically and clearly the likely landscape and visual effects of the development;
- To identify the value related to the receptor, its susceptibly to change and the resulting nature/sensitivity of the receptor;
- To identify the scale/size, duration and 'reversibility' of the effect and the resulting 'magnitude of effect';
- Provide an assessment of the nature and significance of these effects in a logical and well-reasoned fashion; and
- Indicate the measures proposed to avoid, reduce, remedy or compensate for these effects (mitigation measures);

14.7.17 While tables and matrices may be used to support and summarise the assessment, the emphasis in this assessment will be on descriptive text describing the predicted landscape and visual effects with logical, well-reasoned judgements about their significance. Consideration is given to the effects during the short, medium and long term.

14.7.18 Year 1 is taken to be when the entire development is completed. Each of the photographic viewpoints chosen for photomontages will have two images produced. The first at Year 1, when the entire development is completed, the second at Year 15.

14.7.19 The approach taken in defining the magnitude of effect brought about by introducing a development on the landscape character is presented in **Table 14.7** below. Landscape

characteristics may include landform, scale, field patterns, vegetation, buildings and other features of the landscape which combine to give an area its overall character.

Table 14.7: Magnitude of Effect - Landscape Criteria

Very High	The proposed development would lead to an extensive or widespread, irreversible complete alteration of existing landscape character/elements with large scale new features and elements; The addition of new and uncharacteristic conspicuous features and elements (adverse change); The removal, restoration and/ or replacement of existing highly conspicuous and uncharacteristic features and elements (beneficial change).
High	The proposed development would lead to a notable but not extensive change to existing landscape character/elements over a wide area or an intensive change over a more limited area; The addition of new but uncharacteristic prominent features and elements (adverse change); The removal, restoration and/ or replacement of existing highly uncharacteristic features and elements (beneficial change).
Medium	The proposed development would lead to a partial change to existing landscape character/elements which may be partially reversible; The addition of new but uncharacteristic noticeable features and elements (adverse change); The removal, restoration and/ or replacement of existing moderately uncharacteristic features and elements (beneficial change).
Low	The proposed development would lead to a small or relatively localised change in the existing landscape character/elements; The addition of new but uncharacteristic perceptible features and elements (adverse change); The removal, restoration and/ or replacement of existing perceptibly uncharacteristic features and elements (beneficial change).
Very Low	A negligible, potentially reversible change in existing landscape character or landscape elements.
None	No Change.

14.7.20 The magnitude of effect likely to be brought about by the development proposals on visual amenity will be assessed using the following magnitude of change criteria:

Table 14.8: Magnitude of Effect - Visual Criteria

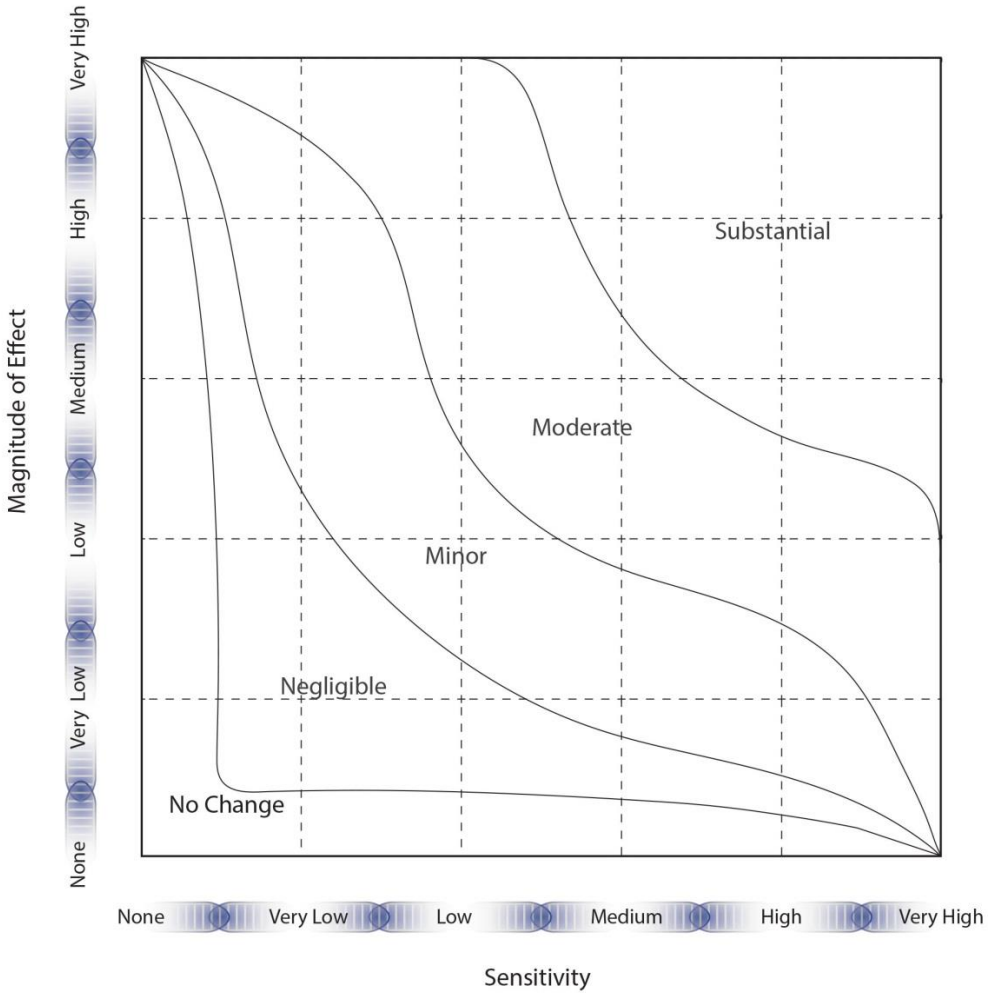
Very High	The proposed development would result in a complete alteration to the characteristics of the view such that post development the existing view would be completely changed; The addition of new and uncharacteristic conspicuous features and elements (adverse change); The removal, restoration and/or replacement of existing highly conspicuous and uncharacteristic features and elements (beneficial change).
High	The proposed development would result in a change in the view such that it becomes the key influence and focus in the view; The addition of new and obvious uncharacteristic features and elements (adverse change); The removal, restoration and/ or replacement of existing uncharacteristic features and elements (beneficial change).
Medium	The proposed development is clearly visible in the view and forms an important but not defining element of the view. The feature may integrate partially; The addition of new and noticeable uncharacteristic features and elements (adverse change); The removal, restoration and/or replacement of existing moderately uncharacteristic features and elements (beneficial change).
Low	The proposed development is visible, but forms a small element and minor alteration in the view and integrates well with existing landscape/features; Slight change to the existing character or features and elements; The addition of new but perceptible uncharacteristic features and elements (adverse change); The removal, restoration and/or replacement of existing perceptibly uncharacteristic features and elements (beneficial change).
Very Low	The proposed development may go unnoticed as a small element in the view, or is not readily visible.
None	No change.

Significance of Effect

14.7.21 The landscape and visual sensitivity of receptors is identified using a five-point scale from 'Very High' to 'Very Low' and this is then combined with magnitude of effect to arrive at a predicted level of effect.

14.7.22 The following chart for predicting levels of effect on landscape and visual receptors is provided, based on industry best practice:

Table 14.9: Significance of Effects Table



14.7.23 Significance is strongly linked to context and scale. For example, whilst a development may be 'significant' to a visual receptor in a nearby single secluded house, the effect may not be 'significant' when considering a larger series of residential receptors further away. Similarly, the loss of trees which are a local feature may be considered 'significant' locally, but of little or no significance to larger character areas within which the tree sits. In addition, whilst an effect may be 'significant', it does not necessarily follow that it would be unacceptable or regarded as an 'undue consequence' (GLVIA3 para 5.40). Whether or not an impact is 'significant' for the purposes of the EIA Regulations will be assessed for each receptor. For likely significant adverse effects, the requirement for monitoring will be considered.

Definition of Effects

14.7.24 The following tables identify the criteria for levels of effect on landscape and visual receptors:

Table 14.10 : Description of Levels of Effect on Landscape Receptors

Substantial Adverse	The development would: • Cause a major deterioration to the quality and character of the existing landscape resource; • Be at considerable variance with the character of the existing landscape; • Degrade or lose the integrity of characteristic features or elements; • Damage or lose the sense of place or local distinctiveness of the area;
Moderate Adverse	The development would: • Cause a noticeable deterioration to the quality and character of the existing landscape resource; • Conflict with the character of the existing landscape; • Have a negative impact on some characteristic features or elements; • Diminish the sense of place or local distinctiveness of the area;
Minor Adverse	The development would: • Cause some deterioration to the quality and character of the existing landscape resource; • Not wholly fit with the character of the landscape; • Be at slight variance with the existing characteristic features or elements; • Slightly detract from the sense of place or local distinctiveness of the area;
Negligible	The development would: • Give rise to no discernible change to the quality and character of the identified landscape resource; • Maintain the character of the landscape/ townscape; • Complement/ blend in with the existing characteristic features or elements; • Retain the sense of place or local distinctiveness of the area.
No Change	
Minor Beneficial	The development would: • Complement and give rise to a perceptible improvement in the quality and character of the identified landscape resource. • Maintain and/or enhance the existing characteristic features or elements; • Enable some of the sense of place or local distinctiveness of the area to be restored.

Moderate Beneficial	The development would: • Give rise to a noticeable improvement in the quality and character of the identified landscape resource; • Enable the creation, repair, conservation and/or restoration of characteristic features or elements partially lost or diminished as a result of inappropriate management or prior development; • Enable the sense of place or local distinctiveness of the area to be restored.
Substantial Beneficial	The development would: • Greatly enhance and give rise to a major improvement to the quality and character of the identified landscape resource; • Enable the creation, repair, conservation and/or restoration of characteristic features or elements lost or harmed as a result of inappropriate management or prior development; • Greatly enhance/reinstate the sense of place or local distinctiveness of the area.

Table 14.11 : Description of Levels of Effect on Visual Receptors

Substantial Adverse	The development would: • Cause a large deterioration in the existing view and visual amenity of the receptor.
Moderate Adverse	The development would: • Cause a noticeable deterioration in the existing view and visual amenity of the receptor.
Minor Adverse	The development would: • Cause a barely perceptible deterioration in the existing view and visual amenity of the receptor.
Negligible	The development would: • Cause no discernible deterioration or improvement to the existing view or visual amenity of the receptor.
No Change	
Minor Beneficial	The development would: • Cause a barely perceptible improvement in the existing view or visual amenity of the receptor.

Moderate Beneficial	The development would: • Cause a noticeable improvement in the existing view and visual amenity of the receptor.
Substantial Beneficial	The development would: • Cause a large improvement in the existing view and visual amenity of the receptor.

14.8 Limitations and Assumptions

14.8.1 This scoping exercise has been based broadly on the maximum parameters of the 2013 Application, with allowance made for changes in the baseline scenario and to the Site boundary as appropriate.

14.8.2 It is recognised that a project of this scale may come forward in a number of phases and over many years. This presents a limitation when assessing effects at Construction and Operation (Year 1 and Year 15), given that it is anticipated that construction will be ongoing on some phases while others may have been completed for some time, due to the market-led nature of the Proposed Development. Phasing will be addressed in the assessment to the extent that this is possible in the context of information available at the time, with regard to effects resulting from the construction programme. Given this uncertainty we proposed to assess the Operational Effects at Year 1 and Year 15, as would normally be expected, but recognise that this is a simplification of the reality.

14.9 References

14.9.1 The following documents have been referenced:

Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA 3) (2013).

An Approach to Landscape Character Assessment – October 2014. Christine Tudor;

Landscape Institute Technical Advice Note 01/2017 (Revised): Tranquillity – An Overview March 2017; and

Landscape Institute TGN 06/19 Visual Representation of Development Proposals.

Natural England's National Character Area Profiles: National Landscape Character Area 142: Somerset Levels and Moors and NCA 143 Mid Somerset Hills;

Somerset and Exmoor National Park Historic Landscape Characterisation Project 1999-2000; and

Sedgemoor Landscape Assessment and Countryside Design Summary – Revised Edition 2003.

15 Climate Change

15.1 Introduction

15.1.1 Regulation 4(2)(c) of the 2017 EIA Regulations requires significant effects on climate to be considered, as appropriate, within the EIA process. In addition, Schedule 4 to the 2017 EIA Regulations requires likely significant effects resulting from "*the impact of the project on climate…and the vulnerability of the project to climate change"* to be addressed within an ES.

15.1.2 The climate change assessment is comprised of two elements, which are presented separately within this scoping chapter:

- Greenhouse gas (GHG) Emissions Assessment (the impact of the proposed development on climate change); and
- Climate Adaptation and Resilience (the impact of climate change on the proposed development).

15.1.3 The methodology for undertaking the GHG emissions assessment will follow the methodology outlined by the Institute of Environmental Management and Assessment (IEMA) guidance on assessing GHG emissions (IEMA, 2017). The scope of emissions within the assessment align with the World Business Council for Sustainable Development (WBCSD) / World Resources Institute (WRI) Greenhouse Gas Protocol (the GHG Protocol) (WBCSD and WRI, 2019) and British Standards Institution (BSI) PAS 2070 (BSI, 2013) methodology and considers both the construction and operation stages of the proposed development.

15.1.4 Legislation and planning policies that are relevant to the Development and climate change include:

- Climate Change Act (2008) (2050 Target Amendment) Order 2019;
- Carbon Budget Orders 2009, 2011 and 2016;
- National Planning Policy Framework (NPPF) (2019): Paragraph 8 (Achieving sustainable development), Paragraphs 148 to 169 (Meeting the challenge of climate change, flooding and coastal change), and the associated Planning Practice Guidance: Climate change (2019).;
- Sedgemoor Adopted Local Plan (2011-2032): Policy S5 Mitigating the Causes and Adapting to the Effects of Climate Change;
- Somerset's Climate Emergency Strategy (Climate Resilient Somerset, 2020).

15.1.5 Other relevant publications include:

- The Climate Change Committees report 'The Sixth Carbon Budget The UK's path to Net Zero'.(CCC, 2020);
- The Road to Zero (DfT, 2018);
- UK Climate Change Risk Assessment 2017 (Defra, 2017);
- The National Adaptation Programme (Defra, 2018);
- Gravity Clean and Inclusive Growth Strategy 2020; and

- Gravity ESG Policy.

15.2 Work Completed to Date

15.2.1 No work in relation to climate change has been undertaken at the time of writing this scoping report. An Energy Strategy is being prepared separately by Stantec, which will be considered in the Climate Change ES chapter. The Energy Strategy will seek to shift away from fossil-fuelled combustion technologies, and increase low carbon generation, energy storage and management on Site.

GHG Emissions Assessment

15.3 Baseline Conditions

15.3.1 The site comprises 261.54 ha of open flat land, of which 167 ha form part of the now decommissioned Royal Ordnance Factory, formerly used for the manufacture of explosives.

15.3.2 There are currently limited greenhouse gas emissions from the site. Scattered trees and shrubs across the site, as well as those clustered in the northwest corner, along the railway line, and along the southern boundary, may provide a limited amount of carbon sequestration on site.

15.3.3 A Somerset-wide Climate Emergency Strategy was formerly adopted by SDC in November 2020. Somerset is seeking to become carbon neutral by 2030. The key themes in Somerset's Draft Climate Emergency Strategy are energy, transport, built environment, business and industry, natural environment, farming and food, water, waste and communications.

2032 Baseline

15.3.4 As set out in **Chapter 5**, the 2032 baseline comprises the consented Huntspill Energy Park (HEP) (excluding safeguarded land for energy generation), local approved developments and the Hinkley C overhead lines. The HEP planning consent allowed for up to 32,150 sqm of B1a, b or c buildings, up to 43,600 sqm of B2 buildings and up to 99,462 sqm of B8 buildings. Due to the outline nature of the application, the exact use of these buildings was not defined. However, due to the scale and use class, if implemented the HEP would generate GHG emissions. It is assumed that the buildings of HEP will need to comply with the 2013 Building Regulations at the Reserved Matters stage. An uplift to the energy efficiency requirements of buildings set by the Building Regulations Part L (conservation of fuel and power) is expected later this year and due to be adopted in 2022.

15.3.5 Sources of GHG emissions would include emissions associated with transport and the energy generation uses of HEP. There will also be emissions associated with purchased electricity from the national grid during operation of HEP, for example for lighting.

15.3.6 The retained habitats and proposed planting on site would provide a limited amount of carbon sequestration.

15.4 Consultation

15.4.1 No consultation in relation to climate change in the EIA has been undertaken at the time of writing this chapter.

15.5 Potential Significant Effects

15.5.1 IEMA guidance (IEMA, 2017) identifies that all GHG emissions will contribute to climate change and thus might be considered significant. It therefore suggests the impact of a development on climate should be based on its potential to emit GHGs.

15.5.2 GHG emissions have a global effect rather than directly affecting specific local receptors to which levels of sensitivity can be assigned. The global climate will therefore be treated as a single receptor.

15.5.3 The WBCSD / WRI GHG Protocol (WBCSD and WRI, 2019) categorises direct and indirect emissions into three broad scopes:

- Scope 1: all direct GHG emissions;
- Scope 2: indirect GHG emissions from consumption of purchased electricity, heat or steam; and
- Scope 3: other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities not covered in Scope 2, outsourced activities, waste disposal, etc.

Construction

15.5.4 During construction, GHG emissions would be generated from the following activities:

- Scope 1: enabling activities, land clearance and construction processes such as emissions resulting from the combustion of fuels in the applicant's owned/controlled vehicles, plants or equipment used for construction of the proposed development.
- Scope 2: emissions associated with electricity needed for plant and welfare facilities.

Operation

15.5.5 During operation, GHG emissions would be generated from the following activities:

- Scope 1: emissions associated with transport.
- Scope 2: emissions associated with purchased electricity from the national grid during operation of the proposed development, for example for lighting and emissions associated with the Energy Strategy.

15.6 Not Significant Effects

15.6.1 There is an absence of significance criteria or defined threshold for determining the significance of effects resulting from GHG emissions in EIA however IEMA guidance (IEMA, 2017) recommends that all GHGs might be considered as significant and that the ES should demonstrate how the project addresses their occurrence through mitigation.

15.6.2 Indirect Scope 3 emissions are emitted from activities which are predominantly outside of Gravity's control, for example, waste disposal and emissions related to the supply chain of construction materials. It is therefore difficult to assess accurately and meaningfully these at the early stage of a project and it is not considered appropriate or proportionate in the context of the Development and the EIA Regulations. IEMA guidance recognises that the assessment of GHGs should be proportionate in the context of EIA. It is therefore proposed that Scope 3

emissions are scoped out of further assessment as it is not considered proportionate to the proposed development within the context of the EIA. Embedded and further mitigation that reduces GHGs, including indirect Scope 3 emissions, associated with the proposed development will be considered within the ES. Therefore, the ES will demonstrate how the proposed development addresses GHG emissions through mitigation, as recommended by IEMA guidance.

15.7 Assessment Methodology

15.7.1 There is no nationally adopted method for assessing climate change within EIA and therefore the assessment approach draws upon IEMA guidance. IEMA guidance emphasises that a proportionate and appropriate assessment should be undertaken to inform decision making and recognises that qualitative assessments are acceptable where mitigation has been agreed early on in the design phase with design and engineering teams.

15.7.2 The assessment for the proposed development will be based on broad parameters. The Proposed Development is likely to embed several measures to reduce GHG emissions associated with energy use, transport and waste generation. A Clean and Inclusive Growth Strategy is being prepared which will outline how low and zero carbon energy infrastructure will be provided at Gravity, along with creating a low carbon campus to support green collar jobs and the transition to zero carbon transport. This is outlined in **Section 4.3** above.

15.7.3 The Proposed Development has the potential to provide several opportunities within its parameters to support low carbon economic growth. Proposed land uses of the Proposed Development include a smart campus and low carbon generation which could result in wider benefits beyond the site GHG emissions. The green industries within the Proposed Development have the potential to decrease GHG emissions by creating incubation facilities for innovative low carbon technologies. These opportunities to further reduce GHG emissions will be considered within the assessment.

15.7.4 It is therefore considered that a qualitative GHG assessment is appropriate and proportionate in the context of the EIA Regulations.

15.7.5 The following methodology for assessment is proposed:

- Review of policy context for the assessment with reference to National and Local policy;
- Qualitative review of potential GHG emission sources during construction and operation of the Proposed development, as outlined above. The qualitative assessment will adopt emission boundaries (i.e., scope of the emissions) that align with Greenhouse Gas Protocol and PAS 2070 methodology (BSI, 2013); and
- Identification of embedded and further mitigation measures to reduce the GHG emissions associated with the Proposed Development.

15.7.6 Due to the subjectivity of defining the degree of significance (i.e., substantial, major, moderate, minor or negligible) for GHG assessments, significance will be determined by professional judgement with due regard to IEMA guidance, based on the magnitude of impacts outlined in **Table 15.1** and the sensitivity of the receptor. The level of effect will be based on IEMA guidance, professional judgement and the matrix in **Table 15.2** below.

Table 15.1 Magnitude of Impacts

Magnitude	Measure of Impact
Large	A large impact considered to be of national scale.

Moderate	A moderate impact considered to be of regional scale.
Small	A small impact considered to be of local scale.
Negligible	An impact considered to be beneath level of perception.

15.7.7 GHG emissions have a global effect rather than directly affecting specific local receptors to which levels of sensitivity can be assigned. The global climate has therefore been treated as a single receptor. Given the global scale and severe consequences of climate change and limited recoverability, the receptor sensitivity is considered to be high.

Table 15.2 Significance of Effects Matrix

Magnitude	Receptor Sensitivity
	High
Large	Major to Substantial
Moderate	Major
Small	Minor to Moderate
Negligible	Negligible to Minor

15.8 Limitations and Assumptions

15.8.1 To ensure transparency within the EIA process, the following limitations and assumptions have been identified.

- The assessment will be based on the proposed development description and Parameter Plans therefore the project information that will inform the GHG emissions assessment will be broad and, where referenced, be based on assumptions.

Climate Resilience and Adaptation

15.9 Baseline Conditions

15.9.1 The IEMA guidance (IEMA, 2020) recommends that the climatic baseline should consider extremes in short-term weather events, such as heatwaves; long-term climatic variability, such as seasonal changes in precipitation; and average climate norms, such as ambient temperature.

15.9.2 Historic climate averages during the period 1981-2010 for the closest climate station to the site (Cannington), obtained from the Met Office website (Met office, undated), indicates the following:

- Average annual maximum temperature was 14.7°C;
- Warmest month on average was July (mean maximum temperatures of 21.6°C);
- Coldest month on average was January (mean minimum temperature of 8.5°C);
- Average total annual rainfall was 755 mm;
- Wettest month on average was October (average monthly rainfall of 83.9 mm); and

- Driest month on average was April (average monthly rainfall of 51.1 mm).

15.9.3 The EA *Flood Map for Planning* (EA, 2021) indicates that the majority of the site is designated as Flood Zone 3, which is defined as land with a 1 in 100 or greater annual probability of fluvial flooding or with a 1 in 200 or greater annual probability of tidal flooding (this assumes no defences are in place). The site however is located approximately 5km inland from the Parrett Estuary, between which are flood defences. Flood risk, existing water bodies and drainage of the Site and surrounding are set out in more detail in **Chapter 13 Water Environment.**

15.9.4 The Somerset-wide Climate Emergency Strategy sets out how resilience against the impacts of climate change should be developed. This includes through reducing the risk of flooding and drought through Natural Flood Management and Sustainable Urban Drainage Systems.

2032 Baseline

15.9.5 **Table 15.3** below provides a summary of the projected climatic changes for the Site. This is based on the UK Climate Projections 2018 (UKCP18) produced by the UK Met Office (Met Office, 2018), which is explained in **Section 15.13** below.

Table 15.3: 50th Percentile Climate Projections in 2032 for 25 km grid square 337500, 137500 using baseline 1981-2000 scenario RCP8.5

Date	Mean air temperature anomaly at 1.5 m (Â°C)	Annual Precipitation rate anomaly (%)	Maximum Summer air temperature anomaly at 1.5 m (Â°C)	Average Summer Precipitation rate anomaly (%)	Minimum Winter air temperature anomaly at 1.5 m (Â°C)	Average Winter Precipitation rate anomaly (%)
2032	1.05	-3.54	1.82	-20.47	1.06	7.18

15.9.6 The projections show that the Site is likely to experience an increase in annual average temperature and a decrease in annual rainfall. By 2032, the Site is expected to experience warmer, drier summers and milder, wetter winters. The assessment will consider the assessment year (2032) as well as 25-year intervals up to 2099, as this is the final year available in the UKCP18 climate projections dataset.

15.10 Consultation

15.10.1 No consultation in relation to climate change has been undertaken at the time of writing this chapter.

15.11 Potential Significant Effects

Construction

15.11.1 During the construction phase it is anticipated that the risk of climate hazards, for example from heatwaves or periods of heavy precipitation may increase however it is expected that these will be managed through standard construction and health and safety practices, such as securing material/equipment and not undertaking works during periods of extreme rainfall. Therefore, the vulnerability of the Proposed Development to climate change during construction will be scoped out of the assessment for the ES.

Operation

15.11.2 The Proposed Development may be vulnerable to varying future climate conditions, relating to high temperatures and heat waves, extreme precipitation events, water shortage in drought conditions and other extreme weather events which could result in adverse effects during the operation of the Proposed Development.

15.11.3 As noted in **Chapter 13**, there are potentially significant effects resulting from flood risk including from sea level rise and tidal flooding.

15.11.4 There is also the potential for climate change, and in particular changes to seasonal patterns, to exacerbate the effects on environmental receptors to an extent that a new or previously identified effect in other topic chapters becomes significant. These are referred to as in-combination climate change impacts.

15.12 Not Significant Effects

15.12.1 As noted above, impacts during construction are not likely to be significant as mitigation measures set out in standard construction practices will sufficiently address this.

15.13 Assessment Methodology

15.13.1 The existing climate conditions for the site have been informed by UK Climate Projections 2018 (UKCP18) produced by the UK Met Office (Met Office, 2018). UKCP18 builds upon the previous projections to provide information on how the climate of the UK may change over the rest of this century. This information will be considered to identify the likely changes to climate to describe the future, emerging baseline and to qualitatively assess the likely significant effects of climate change on the Proposed Development.

15.13.2 UKCP18 uses Representative Concentration Pathways (RCPs) to develop projections and consider factors such as economic activity, population growth and land use change, which will result in a different range of global mean temperature increases until 2099. RCP8.5 represents the highest emissions scenario, including extreme climate change scenarios. This is considered the most appropriate scenario for assessing the impact of climate change on the proposed development, to provide a suitable conservative approach.

15.13.3 The assessment will therefore utilise the probabilistic projections for the assessment year of 2032 and look at 25-year intervals up to the year 2099. The scenario RCP8.5 will be used for the 25 km grid cell within which the Site is located (337500, 137500). A review of the following data from this data set will be undertaken:

- Average Summer Precipitation (% change);
- Average Winter Precipitation (% change);
- Average Annual Precipitation (% change);
- Maximum Average Summer Temperature;
- Minimum Average Winter Temperature; and
- Annual Mean Temperature.

15.13.4 The climate projections described above will be considered alongside the design information available and embedded mitigation to identify the vulnerability and resilience of the proposed development to climate change. The inverse of climate resilience, vulnerability to climate

change refers to an aspect of infrastructure, operations or a project which is susceptible to impacts arising from climate change, e.g., a building may be vulnerable to overheating due to future increase in temperatures if it has not been designed with consideration of higher temperatures.

15.13.5 The following receptors will be assessed:

- Future users of the site
- Infrastructure including buildings and roads
- Ecology, landscaping and planting

15.13.6 Likely significant effects will be identified through the approach set out in the methodology section above. There is no nationally adopted method for assessing and determining significance of climate change impacts within EIA. The assessment approach will therefore draw upon guidance from IEMA (IEMA, 2020). This includes the consideration of whether the effect is temporary or permanent.

15.13.7 Effects that are described as 'minor' or 'negligible' are determined to be 'Not Significant', and effects that are described as 'moderate', 'major' or 'substantial' are determined to be 'Significant'.

15.13.8 Flood risk will be assessed within the Water Environment ES chapter, the methodology for which is set out in **Chapter 13** of this scoping report. The assessment will take EA climate change allowances for sea level rise into account.

15.14 Limitations and Assumptions

15.14.1 Due to the uncertainties that exist around the subject of climate, there are limitations associated with predicting the impacts of climate change into the future, which could result in this assessment either over or underestimating the impacts of climate change on the proposed development. These limitations include:

- Uncertainty around future climate change projections.
- Limited methodological guidance on how a climate change assessment should be carried out.

15.14.2 RCP8.5, the highest emission scenario, is considered most appropriate for this assessment to provide a conservative projection. The assessment will also therefore be based on professional judgement.

15.15 References

BSI (2013). PAS 2070:2013. Specification for the assessment of greenhouse gas emissions of a city. BSI, London.

Climate Resilient Somerset (2020) Somerset's Climate Emergency Strategy. Available here: https://docs.somerset.gov.uk/wl/?id=d527h7Pn0sXEUrwD4nh6d6H6Kd3BN9PE

Defra (2017) 'UK Climate Change Risk Assessment 2017' Available here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/584281/uk-climate-change-risk-assess-2017.pdf

Defra (2018) 'The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting' Available here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/727252/national-adaptation-programme-2018.pdf

DfT (2018) 'The Road to Zero' Available here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739460/road-to-zero.pdf

Environment Agency (EA) (2021) Flood Map for Planning [Online] Available at https://flood-map-for-planning.service.gov.uk/

IEMA (2017). EIA Guidance on assessing greenhouse gas emission and significance.

IEMA (2020). 'EIA Guide to Climate Change Resilience and Adaptation'

Met Office (2018). UK Climate Projections 2018. Available: https://www.metoffice.gov.uk/research/collaboration/ukcp

Met Office (undated). Woodford station climate averages 1981-2010. Available: https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gcjg4205u

World Business Council for Sustainable Development (WBCSD) / World Resources Institute (WRI) (2019) Greenhouse Gas Protocol. Available: http://ghgprotocol.org/about-us

16 Cultural Heritage

16.1 Introduction

16.1.1 The scoping exercise, undertaken by Wessex Archaeology, identifies potential significant effects to the Cultural Heritage resource (archaeology, built heritage, geoarchaeology etc.) resulting from the construction and operation of the Proposed Development and outlines whether and how these will be addressed further in the ES. The section also outlines the existing conditions, works undertaken to date, a preliminary identification of potential effects, approach and methodology and proposed mitigation measures.

16.2 Work Completed to Date

16.2.1 There has been considerable previous work undertaken within the Proposed Development, which includes:

- BAE Royal Ordnance Factory, Puriton, Bridgwater, Archaeological Desk-based Assessment (**Appendix P-1**)
- Royal Ordnance Factory, Historic Building Record (**Appendix P-2**)
- Huntspill Energy Park Access Road, Desk-based Assessment (**Appendix P-3**)
- Huntspill Energy Park Access Road, Geophysical Survey (**Appendix P-4**)
- Cowslip Meadow, Archaeological Mitigation (**Appendix P-5**)
- Gravity, Geophysical Survey (**Appendix P-6**); and
- Gravity Energy Park Access Road, Archaeological Investigations (**Appendix P-7**).

16.3 Baseline Conditions

16.3.1 The current state for the Cultural Heritage assessment will include the archaeological mitigation measures which have already been undertaken as part of the consented Huntspill Energy Park and for the Gravity Access Road. This includes the mitigation for the loss of the historic buildings within the Site which have already been recorded.

16.3.2 The assessment will take account of the information gathered from the new Desk-based Assessment, geophysical survey and any further evaluative work within the Proposed Development to assess the potential for effects on archaeological remains and will use the full extent of the planning permission for the Huntspill Energy Park to assess any change in setting to designated heritage assets.

16.3.3 The Cultural Heritage assessment will not take account of any direct or indirect effects to archaeological remains or built heritage within the extents of the former ROF factory. Impacts upon these assets have already been assessed, accounted for and deemed acceptable during the assessment process for the Huntspill Energy Park application 42/13/00010. Any changes to these assets form part of the 2032 baseline through the implementation of the extant Huntspill Energy Park permission.

2032 Baseline

16.3.4 The 2032 baseline for the Cultural Heritage assessment will include development as set out in **Section 6.2** above.

16.3.5 For the 2032 baseline, the quantum of archaeology within the Site and Study Area will not change. The only potential difference may be an increase calibration of our understanding of the archaeological resource of the area.

16.3.6 The 2013 ES and 2017 ES Addendum for the consented Huntspill Energy Park did not identify any significant effects to designated heritage assets through a change in setting. Any potential effects in this regard, therefore, can only occur through new additions as part of the Proposed Development.

Topography and geology

16.3.7 The Sites' topographic elevation varies between 50 m above Ordnance Datum (aOD) on a ridge of high ground to the south, sloping down to c. 7 m aOD to the north. The underlying geology is mapped as Langport Member, Blue Lias Formation, and Charmouth Mudstone Formation interbedded Limestone and Mudstone which are overlain, across most of the Site, by superficial Tidal Flat Deposits (British Geological Survey online viewer).

Prehistoric and Romano-British (900,000 BC – AD 410)

16.3.8 The Site is located at the edge of two distinct environments: the Somerset Levels to the north, and a distinct ridge overlooking the River Parrett and the tidal flats to the south, suggesting an archaeological potential for a variety of activity throughout prehistory and later periods. The intersection of these landscape zones is important as they often provided opportunities for early prehistoric populations to exploit new resources while later technological advances allowed the landscape to begin to be controlled and managed to suit the needs of the population.

16.3.9 The Somerset Levels have been subject to continual cycles of sea ingression and regression throughout prehistory. There is evidence of seasonal activity from the Mesolithic period onwards, with the Levels utilised as seasonal pasture during the Bronze Age to Iron Age. During the Iron Age, the Levels were used for salt production and industrial activities. (It should be noted that detailed flood modelling demonstrating low risk of inundation has been completed as part of the hydrology baseline and evidence base and it is important to note that no flood events have affected the Site since its construction).

16.3.10 Recent investigations carried out along the route of the Access Road (**Appendix P-7**) uncovered evidence of prehistoric activity in the form of a rectangular ditched enclosure which has been tentatively dated to the Early to Middle Bronze Age. The same investigations also uncovered several east to west orientated field boundary ditches from which a small quantity of Roman pottery was recovered and suggested the area was subject to intensive agricultural activity at the time.

16.3.11 Additional excavations carried out within the Site (**Appendix P-5**) recently uncovered a substantial curvilinear ditch dated by pottery to the Middle to Late Iron Age which may have formed part of an enclosure. The excavations could not identify the projected course of the ditch which seemed to suggest an associated, opposing ditch which would have formed an entrance.

16.3.12 The excavations within the Site also uncovered a substantial masonry wall which was constructed from randomly coursed, large angular limestone blocks and slabs. In association with the wall, the excavations also uncovered a series of other features including a rubble filled trench, a rubble filled drain and a long linear feature all of which were potentially representative of robbed out walls. The pottery from each of these features dated the wall to the Romano-British period, potentially to the 3rd or 4th century AD.

16.3.13 Beyond the development area, an extensive Roman settlement was uncovered in the area of Junction 23 of the M5 during its construction to the south-west of the Site. The settlement was

situated on the edge of a ridge, overlooking the River Parrett. Excavations revealed stone paving, wall foundations and pottery including Samian ware. The settlement was observed to extend beyond the motorway to the west, with the limit of the settlement not identified during the excavations.

16.3.14 Further areas of Roman activity are also recorded within the surrounding area including the route of a potential Roman road from Ilchester to Combwich, recorded 200 m south of the Access Road. Stone metalling associated with the Roman road was uncovered during the works at the M5 construction while mounds thought to be associated with pottery and possible salt production are recorded south of the Roman road.

16.3.15 Archaeological investigations to the north-east of the Site have identified small amounts of Romano-British pottery during the construction of a pipeline. This may indicate the presence of further Romano-British settlement to the north of the survey area.

Saxon and medieval (AD 410 – AD 1539)

16.3.16 The Site is located on the periphery of several known medieval settlements, such as the village of Puriton established in the Saxon period. A further medieval settlement with surviving earthworks is recorded 850 m north of the Site. Beyond the north-west of the Site and the village of Puriton, extensive series of earthworks either representing ridge and furrow or drainage rhynes are recorded. These remains indicate the later Saxon and medieval land management and reclamation across the Somerset Levels.

16.3.17 Several mills are recorded in the wider study area dating from the early 15th to the 17th century. A further potential mill Site is located to the west of the Site as the 1842 Tithe map describes the field as ‘In Mill Field’. It is not clear whether this name is due to an additional mill or due to the proximity of known windmills in the surrounding area.

Post-medieval and modern (AD 1540 to present)

16.3.18 Between the 16th and 19th centuries, the fertile area of the Levels continued to be intensively farmed and much of the historic landscape in the area surrounding the Site is a product of the agricultural activities from this period. The 1842 Puriton Tithe map shows the surrounding area was subdivided into numerous, narrow strips or strip lynchets, farmed by different occupiers, and broadly aligned north to south. Historic mapping from this time also shows the extensive network of rhynes, although some of these were likely established at an earlier date.

16.3.19 A large proportion of the historic buildings within the villages of Puriton and Woolavington were constructed during this period, several of which are now listed including Goldcleeve (NHLE 1060103), Manor Farmhouse (NHLE 1060137) and Hallacott (NHLE 1344688).

16.3.20 In the late 1930s, the Site was selected as a location for a Royal Ordnance Factory to prepare munitions for the imminent outbreak of war primarily due to its relative remoteness, its proximity to coal and chemical supplies and the ready availability of clean water. Due to the secretive nature of the operations being undertaken, the facility was identified only by its code number: ROF 37.

16.3.21 The factory was highly specialised and purpose-built comprising approximately 500 buildings by 1941. By 1943, the workforce at the factory comprised over 2,500 employees, many of whom were housed in ‘pre-fabs’ in the nearby villages.

16.3.22 The factory’s main purpose was to manufactory the explosive RDX (Research Department Explosive) as well as tetryl which was used in the production of detonators and explosive booster charges. The explosives were transported off site to other factory sites.

16.3.23 Following the end of the Second World War, production was briefly halted in favour of producing hexamine and formaldehyde for the chemicals and plastics industry in addition to manufacturing pre-cast concrete houses to help home the millions of people displaced in the cities across the country.

16.3.24 Explosive's production recommenced in the 1950s thanks to the escalating tensions of the Cold War, in particular the Korean War in the early 1950s, which led to a substantial rearmament programme. The site remained in use until 2007, after which it was decommissioned and many of the former buildings removed leaving only a handful of extant structures focused along the southern extent of the factory site. To mitigate their loss, all buildings on the former ROF site were recorded, including those currently standing (Wessex Archaeology 2012a).

Supporting technical documents

16.3.25 The ES chapter will be supported by the following technical appendices which are planned in addition to the information within the work completed to date:

- Historic Environment Desk-based Assessment; and
- Geophysical survey which covers the sections of the Site between the former ROF site and Woolavington Road.

16.4 Consultation

16.4.1 No consultation has been undertaken at the time of writing; however, initial consultation will begin shortly after the completion of this scoping report. Consultation will be an ongoing process as part of the production of the ES and will include:

- The Head of Historic Environment for the South West Heritage Trust (advising Sedgemoor District Council)
- The Conservation Officers for Sedgemoor District Council; and
- Historic England.

16.5 Potential Significant Effects

Construction

16.5.1 The following impacts may lead to potential significant effects during the construction phase of the Proposed Development:

- Physical impact to known and unknown archaeological remains through construction works, e.g., landscaping, service excavation, new foundations etc.
- Harm to the significance of a non-designated heritage asset through physical impacts from construction e.g., demolition, refurbishment or alteration; and
- Harm to the significance of a designated heritage asset through an alteration of its setting.

16.5.2 The following key potential receptors have been identified as being sensitive to works undertaken during the construction phase:

- Archaeological remains (and associated paleoenvironmental remains) associated with the probable Bronze Age enclosure and the Roman-British field system uncovered during

archaeological investigations within the Site and the associated potential for further remains of this nature and date.

- As yet unknown archaeological remains which may be present within the additional land within the Proposed Development which did not form part of the boundary for the consented Huntspill Energy Park, the nature and extent of these are less well understood than those noted above due to a lack of previous work.

- Historic landscape, the character of the historic landscape, including field patterns, boundaries and extant historic elements of the landscape.

- Four listed buildings in Puriton, ten listed buildings in Woolavington and two scheduled monuments, one of which (Brent Knoll hillfort) has been identified beyond the Study Area, set out in **Table 16.1** below.

Table 16.1 Designated Assets

Designation	Asset
Scheduled Monument	Brent Knoll hillfort and associated field system (NHLE 1008248)
	Motte with two baileys, Down End (NHLE 1019291)
Grade I Listed Building	Church of St Michael and All Angels, Puriton NHLE 1344664)
	Church of St Mary, Woolavington (NHLE 1060144)
Grade II Listed Building	Gateway to Puriton Manor, Puriton (NHLE 1296223)
	Unidentified Monument, Puriton (NHLE 1773477)
	Manor Farmhouse, Puriton (NHLE 1060137)
	Gold Cleeve, Woolavington (NHLE 1060103)
	Unidentified Monument, Woolavington (NHLE 1060102)
	Unidentified Monument, Woolavington (NHLE 1344686)
	Pool House, Woolavington (NHLE 1060104)
	Grange Cottage, Woolavington (NHLE 1060105)
	East Grange, Woolavington (NHLE 1060106)
	Cockpit in the Grounds of the Grange, Woolavington (NHLE 1060107)
	Causeway Farmhouse, Woolavington (NHLE 1344687)
	Hallacott, Woolavington (NHLE 1344688)

- Any further designated heritage assets agreed in consultation with the Sedgemoor Conservation Officer and Historic England.

Operation

16.5.3 All physical effects to known heritage assets or archaeological remains will occur during the construction phase, there will be no additional impacts during operation.

16.5.4 The following impacts may lead to potential significant effects during the construction phase of the proposed development:

- Harm to the significance of a designated heritage assets through an alteration to its setting during the operational phase caused by additional light, noise and movement of traffic.

16.5.5 The following key potential receptors have been identified as being sensitive to works undertaken during the operation phase:

- Four listed buildings in Puriton, ten listed buildings in Woolavington and two scheduled monuments, one of which has been identified beyond the Study Area set out in the table above.

- Any further designated heritage assets agreed in consultation with the Sedgemoor Conservation Officer and Historic England.

16.6 Assessment Methodology

Sources

16.6.1 The following sources will be consulted as part of the assessment process:

- The National Heritage List for England (NHLE)
- The Somerset Historic Environment Record (HER)
- Historic maps available online
- Historic maps held as part of Wessex Archaeology's archives from previous work
- Historic maps from the Somerset Archive (only where not already consulted and if open within COVID-19 restrictions)
- Archaeological reports from previous work
- Environment Agency LIDAR
- Historic England Swindon Aerial Photographs
- A detailed walkover of the site and surrounding area, including to any heritage assets with a setting which may interact with the Site; and
- Any additional archives or specific sources to be agreed during consultation.

Study Area

16.6.2 For the purposes of this assessment a primary Study Area of 1 km around the Site will be used in gathering contextual information to further inform the existing state of the environment and to consider the potential impact to designated heritage assets through a change in setting.

16.6.3 Designated heritage assets beyond that 1 km Study Area will be included on an individual basis where professional judgement and/or direction from consultees suggests there is a potential for an impact to their significance through a change in setting.

16.6.4 Collaboration will also be undertaken with LVIA and, where appropriate, assessments upon heritage assets from agreed viewpoints will be integrated into the cultural heritage assessment.

Relevant legislation, policy and guidance

16.6.5 The following legislation will be used in the Cultural Heritage assessment:

- Ancient Monuments an Archaeological Areas Act, 1979
- Protection of Military Remains Act, 1986
- The Hedgerows Regulations 1997 (as amended 2002).
- Town and Country Planning (Listed Buildings and Conservation Areas) Act, 1990; and

- Planning (Listed Buildings and Conservation Areas) Act, 1990.
- Treasure Act 1996

Policy

16.6.6 The following policies are relevant to the Cultural Heritage assessment:

- National Planning Policy Framework (NPPF), 2019: Section 16 (Conserving and enhancing the historic environment);
- Planning Policy Guidance on Conserving and Enhancing the Historic Environment; and
- Sedgemoor Local Plan 2011 – 2032: Policy D26 (Historic Environment).

Guidance

16.6.7 The following guidance is relevant to the Cultural heritage assessment:

- Standards and guidance for historic environment desk-based assessment (Chartered Institute for Archaeologists, 2020)
- Conservation Principles: Policies and Guidance for the Management of the Historic Environment (English Heritage, 2008)
- Managing Significance in Decision Taking in the Historic Environment: Historic Environment Good Practice in Planning Advice Note 2 (Historic England, 2015)
- The Setting of Heritage Assets: Historic Environment Good Practice in Planning Note 3 (Historic England, 2017); and
- The Highways Agency Design Manual for Roads and Bridges (DMRB, Highways England, 2019).

16.6.8 English Heritage's 'Conservation Principles' outline how aesthetic, communal, evidential and historical aspects of a heritage asset may all contribute to its overall value or importance, and these values will be used in assigning significance to selected receptors.

16.6.9 Historic England's Good Practice in Planning Advice Note 3 advocates a systematic and staged approach to the assessment of the effect of development in relation to changes to the settings of heritage assets and how said changes will affect the asset's significance. This staged approach will be followed in any assessments that contribute to the baseline where setting is considered.

Assessment methodology

16.6.10 There is no single accepted or standard guidance for the assessment of the likely effects of development on the archaeological and cultural heritage resource. Although developed for the use on trunk road schemes, the Design Manual for Roads and Bridges (DMRB 2020, LA 104, Revision 1) sets out a detailed methodology for EIA. In conjunction with the DMRB guidance for Cultural Heritage Assessment (DMRB 2020 LA106, Revision 1) it is proposed to apply the approach set out in the DMRB to make an assessment of the effects of the Proposed Development on Archaeology and Cultural Heritage. This is recognised as the most up-to-date and rigorous methodology available for cultural heritage assessment (incorporating landscapes of historical, cultural or archaeological significance) within the EIA process.

16.6.11 Potential significant effects as part of work carried out within the site will be described in terms of their deviation from the 2032 cultural heritage baseline environment.

Significance criteria

16.6.12 Significance, in heritage terms, is defined in national planning policy as:

'The value of a heritage asset to this future generations because of its heritage interest. The interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence but also from its setting.'

16.6.13 Assessment significance will be based upon the guidance documents listed above which have informed the criteria set out in **Table 16.2** below. While this table nominally sets out significance levels, professional judgement will be used in determining significance.

Table 16.2 Significance levels for cultural heritage assessment

Significance	Description
High	World Heritage Sites, Scheduled Monuments, Grade I and II* Listed Buildings, Grade II Listed Buildings that can be shown to have exceptional qualities in their fabric or historical associations. Registered Battlefields, Inventoried Gardens and Designed Landscapes, and non-designated assets of equivalent heritage significance which are considered to be potentially nationally important.
Medium	Grade II Listed Buildings, regionally important archaeological features and areas (as defined in the Historic Environment Record). Grade II Registered Parks and Gardens. Conservation Areas, which are considered regionally important.
Low	Sites and features noted as locally important in the Historic Environment Record. Other, non-designated features of cultural heritage significance.
Negligible	Assets compromised by poor preservation and/or poor contextual associations. Or very common archaeological features / buildings of little or no value at local or other scale.

Magnitude of change

16.6.14 The magnitude of change reflects the degree to which heritage significance is altered through the work undertaken within the site. There is no standard scale of comparison against which the severity of effects on heritage assets may be judged, because of the great variety of resources or receptors. The assignment of a magnitude of impact is a matter of professional judgement, taking into account the nature of the change, whether key elements are affected, and the proportion of the feature affected; the magnitude of change is ranked without reference to the relative importance of the heritage asset affected.

16.6.15 This change can come through either direct or indirect impacts.

Direct impacts

16.6.16 Direct impacts are caused by physical changes to an asset caused by construction work, are permanent and can lead to the loss of, or damage to, archaeological or built heritage assets which cannot be repaired, replaced or recreated.

Indirect impacts

16.6.17 Indirect impacts can occur through changes in setting (including those which arise from, but not exclusively limited to, visual intrusion) which may lead to a change in the contribution that the setting makes to the significance of the asset. Direct impacts can be permanent and/or temporary and may occur during both construction and operation, although in some cases these impacts are reversible.

Significance of effect

16.6.18 Significance of effect in EIA terms is based on professional judgement and is derived by establishing the level of significance of a heritage asset and the magnitude of effect to determine the degree to which the significance of that asset is lost, reduced or otherwise changed as a result of the development of the Site. Consideration will be given to the requirement for monitoring should likely significant adverse effects be identified.

16.7 Limitations and Assumptions

16.7.1 The records held by the Somerset Historic Environment Record, which formed the primary dataset used in the Desk-based Assessment, are not a record of all surviving heritage assets, but a record of the discovery of a wide range of archaeological and historical components of the historic environment. The information held within it is not complete and does not preclude the subsequent discovery of further elements of the historic environment.

16.8 References

Chartered Institute for Archaeologists. (2017). Standards and Guidance for historic environment desk-based assessment.

English Heritage. (2008). Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment.

Highways England. (2019). Design Manual for Roads and Bridges Volume 11 Section 3 Part 2 LA106: Cultural Heritage Assessment.

Historic England. (2015). Managing Significance in Decision Taking in the historic Environment: Historic Environment Good Practice in Planning Advice Note 2.

Historic England. (2017). The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3.

Wessex Archaeology (2012). Royal Ordnance Factory, Puriton, Bridgwater, Somerset: Historic Building Record. Unpublished Report.

Wessex Archaeology (2019). Gravity, Woolavington, Puriton, Somerset: Detailed Gradiometer Survey Report. Unpublished Report

Wessex Archaeology (Forthcoming). Gravity: Historic Environment Desk-based Assessment. Unpublished Report.

17 Topics Not Included in the ES Scope

17.1 Introduction

17.1.1 The ES should be a focused document considering the assessment of likely significant environmental effects, both adverse and beneficial. Therefore, those effects which are not likely to be significant should not be included in the ES - i.e., they should be scoped out of the ES. The following sets out those topics that have been determined not to be significant and therefore are not proposed to be included in the ES as well as those that will be addressed independently in separate assessments. The rationale for this determination is also provided.

17.2 Ground Conditions

Introduction

17.2.1 This section has been prepared by Ashfield Solutions Limited (ASL). ASL was appointed by Gravity as Project Manager for the remediation of land contamination on the site of the former Royal Ordnance Factory (ROF). ASL's role included the independent validation of the remediation works completed by BAE Systems Ltd (BAE) and facilitating the approval of the works with Sedgemoor District Council's (SDC's) contaminated land and planning officers.

17.2.2 This section sets out that the likely effects of the Proposed Development on ground conditions, specifically soils, geology and land contamination. Effects in relation these are not considered to be significant and therefore, it is proposed that this topic can be scoped out of the ES.

17.2.3 The impacts associated with demolition, contaminated land remediation and bulk earthworks (i.e., site levelling) were assessed as part of the planning application for engineering works to facilitate the redevelopment of the site as the Huntspill Energy Park (application ref. 42/11/00017), which was granted planning permission, subject to conditions, on 11 June 2012 (the 2012 Planning Consent).

17.2.4 Whilst the proposed LDO Site boundary extends beyond the boundary for the remediation works as permitted within application 42/11/00017, the latter was defined to encompass all known sources of land contamination associated with the site's former use as a ROF. On this basis, the potential for further land contamination to be encountered within the additional land of the LDO boundary, outside the remediation boundary is very low, primarily a consequence of its historical and current agricultural usage. **Appendix B** shows a comparison of the boundaries for the LDO Site and the 2017 Planning Consent. **Appendix I** shows the land included in the 2012 planning consent for the remediation works.

17.2.5 The remediation of land contamination was completed in November 2020. All works have achieved approval by SDC's Contaminated Land Officer. The completed remediation works have resulted in a significant beneficial effect through the reduction in risk to human health and the environment.

17.2.6 On the basis of the foregoing, the baseline for the LDO assessment is the remediated and levelled site and consideration of potential impacts to the Proposed Development from land contamination are proposed to be scoped out of the ES. This is consistent with the conclusions of the Environmental Statement for the 2017 Planning Consent, which identified only negligible residual effects relating to natural ground hazards.

17.2.7 Furthermore, other potential effects relating to soils and geology (including natural ground hazards) are also scoped out of the ES. The rational for potential affects relating to ground conditions as a whole to be scoped out of the ES are set out below.

Work Completed to Date

17.2.8 With regard to ground conditions, a number of assessments setting out the pre-remediation state of the Site were submitted by BAE to discharge Condition 10 of application 42/11/00017. Condition 10 comprises a typical planning condition for the assessment of risk associated with the development of brownfield land.

17.2.9 In accordance with current UK Contaminated Land Guidance, the assessments were undertaken in a phased manner and comprised:

- A geo-environmental 'desk study' in 2004 (report ref. B0045/02-R1-1, updated in September 2008);
- An initial 'Stage 1' ground investigation in 2008 (report ref. B0045/02-R3-1, January 2009); and,
- A more detailed 'Stage 2' ground investigation in 2009/10 (report ref. B0045/05-R4-1, March 2010).

17.2.10 Site investigation data from the above assessments was used as the basis for the 2012 Contaminated Land Risk Assessment (CLRA) (Report ref. B0045/05-R5-2). The CLRA incorporated a Detailed Quantitative Risk Assessment to identify 'relevant contaminant linkages' (RCLs) that could be unacceptable in the context of the proposed development.

17.2.11 In summary, the CLRA identified the following RCLs associated with the manufacture of explosives and associated activities:

- Surface material at "burning grounds" contaminated with explosives, asbestos and heavy metals.
- Areas where former construction arisings have been disposed of, primarily asbestos containing materials.
- Sediment in rhynes and drains contaminated with explosives residues.
- Contamination associated with minor constituents of made ground, including lead, polycyclic aromatic hydrocarbons (PAHs) and asbestos.
- The potential for unexploded ordnance in areas of former ammunition breakdown.
- A localised area of groundwater contamination caused by TNT manufacture.

17.2.12 The CLRA did not identify the potential for contamination sources on the site to have significantly affected soil, ground or surface water receptors outside of the ROF fence.

17.2.13 The CLRA also included a ground gas risk assessment and identified potential risk to future development associated with natural ground gases and radon. The CLRA defines the likely standard of ground gas and radon protection that would be needed to mitigate associated risk.

17.2.14 The RCLs were taken forward into the "Remedial Options Appraisal" (Report ref. B0045/05-R6-2). This report identified a series of remedial measures, best suited to the identified contamination. In turn, the identified measures fed into the "Remediation Implementation Plan" (Report ref. B0045/08-R1-3). This details the specific physical works to be undertaken to mitigate risk to human health and the environment in the context of site development, as approved by SDC.

17.2.15 Condition 10 ("Site Investigation and Remediation Strategy") was discharged on 10 July 2013. The approval letter confirming SDC's discharge of Condition 10 states that remediation must be undertaken in compliance with the Remediation Implementation Plan.

17.2.16 Remediation works commenced in March 2018 and were completed in November 2020. The works were undertaken in three phases, each with a supporting verification report providing evidence that the works were completed in accordance with the approved strategy. Each verification report was then submitted to the Contaminated Land Officer for approval of Condition 11 of 42/11/00017 which states:

"*Within 12 months of the commencement of this development (or other such time or stage agreed in writing with the LPA), a verification report demonstrating completion of the works set out in the approved remediation strategy and the effectiveness of the remediation shall be submitted to and approved, in writing, by the Local Planning Authority".*

17.2.17 The verification reports presented a record of the works undertaken and therefore reflect the site condition for the purpose of the EIA for the LDO. The reports are referenced below:

- BAE Systems, March 2019, X0625-R6-3, "Remediation Verification Report – Phase 1". Approval of the report was confirmed by SDC's planning team on 13th June 2019.
- BAE Systems, September 2020, X0625-R9-2, "Remediation Verification Report – Phase 2". Approval of the report was confirmed by SDC's planning team on 24th December 2020.
- BAE Systems, October 2019, X0625-R8-1, "Groundwater Remediation Verification – TNT Section". Approval of the report was confirmed by SDC's planning team on 17th January 2020.

Potential Effects

17.2.18 The remediation works were implemented to make the site suitable for an end use of a mixture of employment uses with associated infrastructure, areas of land for energy generation and areas of landscaping in accordance with the 2017 Planning Consent.

17.2.19 The LDO seeks to amend the allocation of land uses as defined in the 2017 Planning Consent, most notably removal of land safeguarded for energy creation with an increase in employment related uses. On this basis, the condition of remediated areas will be suitable for the land uses proposed under the LDO with no significant identified impacts from land contamination.

17.2.20 Notwithstanding the above, it is understood that residential properties are proposed within a small area in the south east of the former ROF fence area. No significant adverse impacts have been identified for this area as there is no history of contaminative land uses. However, a change in use assessment will be required to formally demonstrate the "suitability of use" for residential development in this area. This change in use assessment will be prepared with the LDO and provided as a standalone document.

17.2.21 The Proposed Development also includes residential development on the agricultural land to the south of the former ROF boundary. A preliminary desk top assessment was undertaken for the agricultural land, utilising historical mapping and commercially available environmental record searches. Based upon the review of this information, no significant adverse impacts have been identified for this land as there is no history of contaminative land uses. A desktop or "Phase 1" contaminated land assessment for the agricultural land will be prepared with the LDO and provided as a standalone document.

17.2.22 As with development within the remediation boundary, residual effects relating to natural ground hazards are also identified for development in the area of agricultural land, as discussed below.

17.2.23 No significant adverse effects relating to ground conditions and land contamination have been identified with the proposed reinstatement of the railway line leading from the Site to the main Exeter – Bristol line. All potentially contaminative activities (e.g., refuelling / loading / maintenance) associated with the factory's use of the railway were undertaken within sidings located within the remediation boundary. As with any railway line there is the potential for historical minor fuel / oil spillages along the track. However, these will not result in any significant adverse effect in light of its safeguarded status for reinstatement of the railway line.

17.2.24 Earthworks to create development platforms will be undertaken for the Proposed Development. The required earthworks will include the "breaking out" of residual building foundations, sustainable reuse of site-won materials, cut and fill earthworks and the creation of development platforms i.e., a compacted and level surface suitable for future construction activities.

17.2.25 Given the extensive assessment and remediation works undertaken, there is a low potential for "unforeseen contamination" to be encountered. However, a contamination "discovery strategy" is currently being developed by Gravity that sets out the principles for the management of any unforeseen contamination encountered during earthworks activities. This shall be submitted to SDC for approval during Q2 of 2021. This will be included in the CEMP.

17.2.26 Any further contamination that is encountered will be dealt with in accordance with the existing approved remediation strategy, thus ensuring potential adverse effects to human health and the environment are mitigated.

17.2.27 In summary, the direct impact of demolition, remediation and earthworks and the reduction in risk to human health and the environment resulting from the remediation of contaminated land were considered as part of the 2012 Planning Consent and can therefore be scoped out of this assessment.

17.2.28 The remediation works undertaken will be suitable for the development coming forward as part of the Proposed Development. Following the earthworks, development plots will be finished with site-won materials, all significantly contaminated soil having been already removed under the 2012 Planning Consent.

17.2.29 A framework Construction Phase Environmental Plan outlining the broad mitigation to be adopted during the construction phase in relation to storage of fuels, spillages and general pollution control shall be submitted with the LDO.

References

BAE Systems Environmental, August 2004 (updated September 2008), Report No: B0045/02-R1-1, 'Desk study for potential contamination, RO Bridgwater'

BAE Systems Environmental, January 2009, Report No: B0045/02-R3-1, 'Stage 1 ground investigation, Bridgwater, Factual report'

BAE Systems Environmental, March 2010, Report No: B0045/05-R4-1, 'Stage 2 Ground Investigation, Factual report, Bridgwater'

BAE Systems Environmental, November 2012, Report No: B0045/05-R5-2, 'Contaminated Land Risk Assessment'

BAE Systems Environmental, November 2012, Report No: B0045/05-R6-2, 'Remedial Options Study'

BAE Systems Environmental, November 2017, Report No: B0045/08-R1-3, 'Remedial Implementation Plan'

BAE Systems Environmental, March 2019, Report No: X0625-R6-3, 'Remediation Verification Report Phase 1'

BAE Systems Environmental, September 2020, Report No: X0625-R9-2, "Remediation Verification Report – Phase 2".

BAE Systems Environmental, October 2019, X0625-R8-1, "Groundwater Remediation Verification – TNT Section".

17.3 Agricultural Land

17.3.1 The Agricultural Land Classification (ALC) provides a method for assessing the quality of farmland to enable informed choices to be made about its future use within the planning system. It helps underpin the principles of sustainable development.

17.3.2 The ALC system classifies land into five grades, with Grade 3 subdivided into Subgrades 3a and 3b. The best and most versatile land is defined by policy guidance as Grades 1, 2 and 3a. This is the land which is most flexible, productive and efficient in response to inputs and which can best deliver future crops for food and non-food uses such as biomass, fibres and pharmaceuticals.

17.3.3 The following areas of agricultural land are located within the Site (split by their various licences):

- Approximately 30.2 hectares of grass keep agricultural land is located in the south east corner of the Site, to the north of Woolavington Road surrounding the Approach Road.
- Approximately 17.7 hectares of grass keep agricultural land is located in the north west corner the Site, surrounding the railway line. A small area of land is also located in the south west section of the Site, in close proximity to the village of Puriton.
- Approximately 1.9 hectares of grass keep agricultural land is located in the east of the Site.
- Approximately 4.9 hectares of agricultural holdings agricultural land is located in the north of the Site, north of Woolavington Road.

17.3.4 All of the above land is classed as permanent pasture (grassland) and the short term let grass keep licences expire in April 2021.

17.3.5 The Site is considered to consist of areas of 'Good to Moderate' (Grade 3) as per the above descriptions and the Agricultural Land Classification Survey. As a result, the proposed development will entail the permanent loss of up to 55 ha of 'Good to Moderate' agricultural land.

17.3.6 However, the planning status, including as an Enterprise Zone, as set out in **Chapter 2** needs to be recognised in assessing the loss of agricultural land. As a result, the loss of the agricultural land within the Site is accepted at a policy level and considered to be more than outweighed by the economic and social benefits of the development.

17.3.7 It is considered that the loss of such agricultural land could have a minor adverse effect to the provision of agricultural land as a resource in the local area, but that this is considered acceptable given the development of the Enterprise Zone.

17.3.8 Consequently, the effect of the proposed development on agricultural land is considered not to be significant in EIA terms. It is proposed that agricultural land can be scoped out of the ES.

17.4 Lighting

Introduction

17.4.1 Whilst not proposed to be a topic chapter within the ES, a separate lighting assessment report will be produced by Stantec. The lighting assessment will identify potential effects from obtrusive light due to external artificial lighting associated with the construction and operation of the Proposed Development and provide further information on the general lighting strategy for the Proposed Development.

Baseline

Overview

17.4.2 A desk-based review of the Site has been undertaken using publicly available data sources. A review of the previous lighting assessment submitted as part of the 2013 ES and 2017 ES Addendum was also reviewed. The Site is not subject to any statutory landscape or ecological designations, however there are a range of ecological and landscape designated area located in proximity to the Site including:

- Huntspill River National Nature Reserve (NNR) immediately north of the Site;
- Bridgwater Bay Site of Special Scientific Interest (SSSI), Severn Estuary Ramsar site, SPA and Special Area of Conservation (SAC) approximately 2.2km west of the Site;
- Catcott Edington and Chilton Moors SSSI, Somerset Levels and Moors Ramsar site and Special Protection Area (SPA) approximately 3.1km east of the Site;
- Quantock Hills Area of Outstanding Natural Beauty (AONB) approximately 11km south west of the Site; and
- Mendip Hills AONB approximately 15km north west of the Site.

Current state of the environment

17.4.3 The Royal Ordnance Factory was previously located on part of the Site and contained a range of buildings and artificial lighting (including road and flood lighting) prior to the ceasing of operations in 2008. Since this time, the Site has largely been cleared and the majority of the buildings on Site have been demolished, however a few buildings are remaining which have associated artificial lighting.

17.4.4 To the north and east of the Site, the area is predominantly agricultural with individual residential dwellings and farms and the small village of East Huntspill. There are likely to be minor sources of artificial lighting associated with security and amenity use in these areas. There is also some street lighting present within East Huntspill.

17.4.5 To the south east and south west of the Site are the villages of Woolavington and Puriton, respectively, which also contain street lighting and sources of lighting associated with residential and commercial uses. Beyond Puriton to the south west, is Woodlands Court

Business park which includes large employment and storage and distribution units (such as Morrisons). Further south of this again is the large urban area of Bridgwater.

17.4.6 Construction is ongoing on a new Site access road which connects the southern boundary of the Site to the A39. This road will be lit. It is anticipated that this will be complete by Summer 2021.

17.4.7 Based on the above desk-based review and in accordance with the ILP Environmental Zone Classifications (as outlined in **Table 17.1** below) it is anticipated that the current state of the environment for the Site would be classified as Environmental Zone E2 – Rural. However, this will be confirmed during the Site visit and agreed with SDC.

Table 17.1: Environmental Zone Classification, ILP, 2020

Environmental Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark (Sky Quality Measurements (SQM) 20.5+)[33]	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Natural	Intrinsically dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.
E2	Rural	Low district brightness (SQM ~15 to 20)	Sparsely inhabited rural areas, village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small town centres of suburban locations
E4	Urban	High district brightness	Town/city centres with high levels of night- time activity

2032 Baseline

17.4.8 In relation to the future 2032 baseline, the Lighting Impact Assessment prepared for the 2013 ES and subsequent 2017 ES Addendum for Huntspill Energy Park identified that lighting likely to be required as part of the development would include:

- column mounted road and car park lighting (Light Emitting Diode (LED luminaries);
- approach road (sodium luminaries);
- column and building mounted luminaries at loading bays and industrial yards (LED or metal halide);
- low level bollard lighting or columns along footpaths; and
- low level lighting and building mounted lighting at recreational facilities.

[33] SQM (Sky Quality Measurements) referenced by the International Dark-Sky Association (IDA)

17.4.9 It also identified that there may be internal light egress from office, warehouse, and industrial buildings (e.g., through skylights) which may have a visual impact.

17.4.10 Given the proposed uses and lighting strategy associated with the Huntspill Energy Park (as identified in the 2012 ES and 2017 ES Addendum), the future 2032 baseline of the Site may be classified as E2 – Rural across areas with lower intensity/ no lighting (e.g., landscaping), with areas of greater illumination (e.g., industrial yards) potentially being classified as E3 – Suburban.

Sensitive Receptors

17.4.11 **Table 17.2** outlines existing and proposed light sensitive receptors located in proximity to the Site that will be considered as part of the lighting assessment. The distant receptors will be reviewed when LVIA viewpoints and the Zone of Theoretical Visibility are confirmed.

Table 17.2: Light Sensitive Receptors

Receptor	Description
	Existing Receptors
Residents	Existing local residents of: • Withy Grove Road (~750m west of the Site) • East Huntspill (~1km north of the Site) • Woolavington (adjacent to south eastern boundary) • On Woolavington Road (adjacent to southern boundary) • Puriton (~50m from southern boundary)
Visual Amenity	Landscapes and views from: • Quantock Hills (~11km south west of the Site, some smaller villages in between, mostly greenfield.) • Mendip Hills (~16km north west, mostly greenfield, some smaller villages) • Brents Knoll (~8km north, all greenfield in between).
Road users	Existing road users in proximity to the site, namely: • Woolavington Road (within the boundaries of, and adjacent to, the Site) • M5 (adjacent to the western Site boundary) • Batch Road/Puriton Road (within the boundaries of, and adjacent to, the Site) • B3141 Causeway (adjacent to the eastern Site boundary) • A39 (adjacent to the southern Site boundary)
Ecology	Existing light sensitive species and habitats on and in close proximity to the Site, including bats and associated foraging and commuting corridors (as outlined in **Chapter 12: Biodiversity**).
	Future receptors
Residential	New residential receptors located on site as part of the proposed development.
Road Users	New internal roads within the proposed development
Railway	New railhead and track provided as part of the proposed development.

Receptor	Description
Ecological	Retained and proposed habitats provided on site.

Consultation

17.4.12 SDC Environmental Health Officers (EHOs) were contacted to agree the proposed approach to the lighting assessment[34]. It was proposed that:

- lighting be scoped out of the ES and that a lighting assessment report be prepared (and that this would be confirmed thought the ES Scoping process):
- that a daytime and nighttime visit to the site and viewpoints in the surrounding area be undertaken to record existing conditions;
- the lighting assessment will consist of a qualitative assessment of construction effects and operational effects and will identify lighting design objectives and mitigation measures (if required) that will inform the future detailed lighting design that will be submitted for approval as part of a planning condition; and
- the data gathered during the lighting survey will also be used to feed into other assessments as appropriate (e.g., biodiversity and landscape).

17.4.13 The EHO confirm that the proposed approach was considered to be appropriate, subject to the outcome of the site visit. Confirmation on the proposed approach was also sought from the landscape and biodiversity officers. The landscape officer has confirmed that the proposed methodology is appropriate[35].

17.4.14 Further consultation will be undertaken with SDC to agree the nighttime viewpoints to be included as part of the existing conditions (2021) survey and to agree the Environmental Zone classification for the existing conditions (2021) of the Site once the survey has been undertaken which will assist determining the future (2032) baseline scenario for the assessment.

Potential Effects

Construction

17.4.15 Construction lighting has the potential to lead to more obtrusive light than operational lighting because of its temporary nature, and the type of lighting equipment used. For ease of deployment and use, construction lighting tends to be mobile, and focus on providing the widest coverage of light from the fewest possible units in order to minimise time spent maintaining and installing the equipment. While construction is predominantly a daytime activity, lighting is more likely to be required during the daytime in winter when the hours of daylight are shorter.

17.4.16 It is anticipated that obtrusive light during construction activities would be controlled through the implementation of best practice measures, informed by the Institute of Lighting Professionals Guidance Notes for the Reduction of Obtrusive Light GN01/20:2020 and would include prevention measures, such as the use of sufficient lighting units for the task in hand to

[34] Email correspondence between Environmental Planner at Stantec and Senior Pollution Environmental Health Officer at SDC between 02/02/2021 and 09/02/2021.

[35] Email correspondence between Environmental Planner at Stantec and Landscape Officer at SDC between 11/02/21.

avoid the need for tall, wide beam lighting units; the reduction of fixed lighting outside working hours; the use of infrared CCTV systems for security; and any requirements for ongoing monitoring and liaison with stakeholders. It is anticipated that these measures will be secured through the production of a Construction Environmental Management Plan (or similar).

It is therefore not anticipated that there would be significant effects in relation to obtrusive lighting during the construction phase of the development. The lighting assessment will outline potential construction effects to sensitive receptors and identify any necessary mitigation measures to be implemented during construction.

Operation

17.4.17 During operation of the Proposed Development, without mitigation, sensitive receptors within close proximity of the Site, as identified above, could be subject to potential adverse effects resulting from light intrusion and glare of poorly designed or controlled luminaires. There is also a potential for adverse effects from sky glow and visual changes in night-time scene to sensitive receptors located further from the Site without mitigation.

17.4.18 As outlined above, Huntspill Energy Park would introduce new sources of artificial lighting to the Site that would be present in the 2032 baseline associated with roads, carparks, industrial, office and recreational uses. The Proposed Development would similarly introduce new sources of artificial lighting to the Site associated with proposed commercial, residential, and recreational uses and proposed rail, energy, and road infrastructure. The Site boundary will also extend beyond that of the consented Huntspill Energy Park, particularly to the south east towards Woolavington.

17.4.19 As a result of the changes to the LDO, there may be changes to the operational effects experienced by residents given the increase in size of the site (which has meant that the site boundary is now in closer proximity to residents in Woolavington) and change of use of the site (which may increase the amount of artificial lighting provided on site). However, given the nature, location and amount of artificial lighting anticipated to be required as part of the consent LDO for Huntspill Energy Park, in comparison to the Proposed Development, it is not anticipated that this would result in adverse likely significant effects.

17.4.20 Potential adverse operational effects from obtrusive light at the Proposed Development will be controlled through targeting the limitations for exterior lighting established in the Institution of Lighting Professionals Guidance Notes for the Reduction of Obtrusive Light (2020) and having due regard to the Bat Conservation Trust 08/18 Guidance Note Bats and Artificial Lighting in the UK (2018).

17.4.21 Measures to mitigate potential effects such as light intrusion (into windows of residential properties or sensitive habitats of protected species), glare and sky glow will be implemented through appropriate lighting design and control measures, including appropriate landscaping design (to provide screening) and sensitive lighting design. Measures may also include the type of luminaire, the use of shields, hoods, planting and beneficial landscaping, as well as the design and positioning of lights (e.g., power, orientation, and height of the luminaire). Appropriate lighting fittings will be selected to consider the environment, which is being lit, for example lighting specific to recreational or commercial use areas.

Methodology

17.4.22 As outlined above, it is proposed that a Lighting Assessment report be prepared in respect of the LDO. The Lighting Assessment will be prepared having due regard to the ILP Professional Lighting Guide 04: Guidance on Undertaking Environmental Lighting Impact Assessments (2013) and ILP Guidance Note for the Reduction of Obtrusive Light (2020).

17.4.23 The preliminary qualitative assessment of the existing external lighting conditions will be verified by a field survey of the Site and its immediate surroundings completed as part of the baseline lighting survey. The survey would include night-time photography from the pre-determined viewpoints that will be agreed with SDC.

17.4.24 Due to the LDO requirements, the lighting assessment will be qualitative, and the assessment undertaken based on the parameters of the development and proposed land uses. The report will provide an assessment of the Proposed Development against a 2032 baseline scenario, which will assume that the consented Huntspill Energy Park, approved village enhancement scheme and other local committed developments have been build out (as explained in **Chapter 6**) and will account for other likely changes to the environment that will occur during this time (e.g., in relation to light pollution).

17.4.25 Lighting design principles, objectives and mitigation measures (where necessary) will be outlined in the lighting assessment report, however detailed lighting modelling, calculations and associated analysis will be excluded.

17.5 Arboriculture

17.5.1 Update habitat surveys were undertaken throughout 2020 to reconfirm the general ecological value of the Site and the main habitats and associated plant species.

17.5.2 The site was surveyed based around extended Phase 1 survey methodology, as recommended by Natural England, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. The site contains a number of mature trees, hedgerows and blocks of woodland. These areas have been subject to an Arboricultural Survey to BS 5837:2012 and an Arboricultural Impact Assessment will be prepared and appended to the LVIA chapter.

17.5.3 There are trees and hedgerows on site. Trees comprise primarily young plantations of sycamore and ash in the south east of the former ROF site and mature poplar woodland in north-west corner of the site. There are also mature trees within fields and hedgerows in the agricultural grazing land in the south-east of the site.

17.5.4 There is also an avenue of horse chestnut within the former ROF site which were last pollarded 20 years ago. They have recently (early 2021) been re-pollarded to help stability.

17.5.5 In addition, black poplars once occupied this landscape, but have now become very rare. A genuine species has been sourced which will be reintroduced through an on-site nursery.

17.5.6 The trees have been identified and categorised; this information will be used to inform the emerging design and landscape proposals, ensuring that the removal of any trees is compensated as necessary. The survey will also inform the Biodiversity ES chapter.

17.5.7 Significant effects are not anticipated in relation to the trees on the site and a standalone Arboricultural Impact Assessment will be appended to the LVIA chapter to confirm this.

17.6 Waste

17.6.1 The Proposed Development will require materials and generate waste during both construction and operation. The Site is currently primarily a brownfield site that has historically been occupied by the Royal Ordnance Factory which consisted of a range of buildings. The operations ceased in 2008, with the site now cleared following demolition and removal of the majority of buildings. A few buildings remain, most of which are currently being used as site offices, the demolition of which forms part pf the proposed development. As a result, there is very limited operational waste currently being generated on the site.

Construction

Materials

17.6.2 The geo-environmental impact from excavated material be will assessed in the Soils, Hydrogeology and Ground Conditions of the ES. It is not expected that any excavation material will need to be transported off site, any generated will be reused and recycled on site for use in landscaping features. A Materials Management Plan (MMP) has been in place throughout the remediation works that have brought the site to its current state. This MMP will be brought forward and updated throughout the construction phase of the Proposed Development.

17.6.3 Given the nature of the Proposed Development, materials required for the construction of the proposed development will be carefully sourced through adherence to a Sustainable Procurement Plan (SPP). This will serve to ensure that environmental impacts of material use will be minimised, through where practicable the use of construction materials that comprise recycled content and reportable sustainability credentials. The proposed development is unlikely therefore to result in materials becoming scarce. This will further support the sustainability goals of the Proposed Development.

17.6.4 At design stages, measures to reduce natural resource consumption and waste generation will be incorporated, examples include:

- Off-site fabrication;
- Use of standard sizing and modular design;
- Reduction of material demand through design measures;
- Consideration of the sustainability of materials; and
- Re-use of waste materials on-site.

17.6.5 As a result, the proposed development is not likely to have any significant effects in relation to materials.

17.6.6 Consideration of Mineral Safeguarding Areas (MSA) has been looked at in the context of the Somerset Minerals Plan (2015). Appendix B, Map 8 of the Plan indicates that there are no MSA in proximity to the site, and so no further consideration is required in regard to potential sterilisation of mineral resources.

Waste

17.6.7 A Framework Site Waste Management Plan (SWMP) will be prepared for the construction phase to support the LDO and will be appended to the ES. This will set out the Client's corporate goals for waste minimisation and diversion from landfill, including 95%+ diversion from landfill of any recorded construction waste. The targeted recycling rate for Construction and Demolition (C&D) waste in the Somerset Waste Core Strategy (2013) is 79% by 2028. This SWMP will then be developed and incorporated into the development.

17.6.8 Waste generation during the construction phase is likely to result from the construction of the new buildings and infrastructure. This will however be reduced through sustainable procurement measure and detailed planning to ensure any waste generated is kept to a minimum. Any waste that is generated will be managed in accordance with national legislation, all the time looking to reduce, reuse and recycle whenever possible.

17.6.9 Such measures will ensure that the volume of waste likely to be generated by the Proposed Development during construction will be limited and will not significantly affect the capacity of local waste infrastructure.

Operation

17.6.10 The operational phase of the Proposed Development will result in waste arisings. At this point with no information on the end users of the site, it is not possible to identify the specific composition and quantities of the waste likely to be generated. All waste producers will however, through Duty of Care regulations. be expected to adhere to the principles of the Waste Hierarchy, ensuring waste minimisation prior to reuse, recycling and recovery.

17.6.11 The Client will develop an Operational Waste Management Strategy which will be submitted with the LDO. Given it is not possible at this stage to identify specific composition and quantities of the waste likely to be generated, the aim of this Strategy is to detail the LDO's commitments to achieve local and national waste targets as a minimum. It will set out the principles to be followed in line with the broader client objectives. It will also include some information relating to Operational Waste Storage and Servicing Plans. This will be appended to the ES and is being prepared by Stantec.

17.6.12 To help ensure the Proposed Development works towards its targets in regard to highly sustainable waste management processes, as the LDO is delivered, detailed Operational Waste Storage and Serving Plans will be developed and will further:

- identify relevant national and local policy and guidance and provide commentary on how this development will support and exceed these;
- identify the expected waste arisings the operational phases of the development;
- define responsibilities for waste management; and
- provide details on how waste will be stored and serviced.

17.6.13 Both the Operational Waste Strategy and the Operational Waste Storage and Servicing Plans will incorporate consultation with the Somerset Waste Partnership to understand any policy or plans which should be considered as part of the LDO. The Strategy and Plans will be appended to the ES to outline how waste will be managed as part of the Proposed Development and to support meeting the requirements of Schedule 4 of the EIA Regulations in relation to information on waste.

17.6.14 Wastewater will be covered in the 'Water Resources' chapter of the Environmental Statement. This chapter will cover flood risk, surface water drainage, foul/wastewater drainage and potable water supply. This will be written to tie in with the water recycling strategy being developed by Albion Water. Stantec hydro engineers are liaising with Albion Water through the Utilities subgroup. Wastewater will also be considered in the Utilities Strategy report being prepared by Stantec (using information from Albion Water).

Summary

17.6.15 The commitments outlined above include the preparation of a MMP, SWMP, Operational Waste Strategy and Operational Waste Storage and Servicing Plans. The development and implementation of these together with the established Environmental Permitting regime, are the appropriate mechanisms to ensure materials and waste are managed effectively and efficiently with environmental impacts minimised, and benefits maximised throughout the lifetime of the LDO. As such, no likely significant effects are expected, and thus it is proposed that Materials and Waste is scoped out of the ES.

17.7 Sustainability and Energy

Introduction

17.7.1 Sustainability will be incorporated into the design process for the Proposed Development in accordance with local and national planning policy, and the sustainability aspirations of This is Gravity. Sustainability is at the heart of the design and development of Gravity and is fundamental to the Site's long-term development strategy.

17.7.2 A Clean and Inclusive Growth Strategy has been developed for Gravity. This Strategy will create a route to delivering clean and inclusive economic growth at Gravity, creating a smart campus and integrated community that delivers the 4th Industrial Revolution.

17.7.3 In addition, an Environmental and Social Governance Policy is being developed to set out a responsible approach to investment, to encourage green finance, as well as to inform management practice.

17.7.4 Gravity is also ensuring that its journey aligns to global standards including the UN Sustainable Development Goals (UNSDG) through embedding Environmental and Social Governance (ESG) practices into the Clean and Inclusive Growth Strategy. Evaluation of the UN SDGs has resulted in 12 goals being identified as highly relevant and applicable to Gravity, and these have been organised into five key themes.

17.7.5 Stantec will also be producing an Energy Strategy for the Site. The energy strategy will provide national scale power infrastructure to enable high energy intensive industries including cyber infrastructure, advanced manufacturing, biosciences, digital, agri-tech and zero-emission transport.

Potential Effects

17.7.6 The potential effects of the sustainability measures as outlined above will be assessed through the ES chapters.

17.7.7 It is considered that sustainability and energy, as environmental topics, do not require specific assessment within the ES and is not proposed to form part of the scope of the ES. Topics with relevance to creation of a sustainable development such as social and economic effects, sustainable transport, nature conservation impacts, and sustainable drainage will be addressed through these environmental assessments.

17.7.8 It is therefore proposed that sustainability and energy are scoped out of the ES.

17.7.9 The Energy Strategy, Clean and Inclusive Growth Strategy and the Environmental and Social Governance Policy will be submitted with the LDO.

17.8 Utilities

17.8.1 It is proposed that utilities will be scoped out of the ES and will be addressed within a Utilities Strategy report that will sit alongside the ES.

17.8.2 The incoming electricity, gas (if required), water supply, foul drainage, or telecommunications utility networks will be designed and detailed by EON, Wessex Water, Cellnex and Albion Water as these organisations will ultimately own and operate the electricity, water supply and foul drainage networks.

17.8.3 The Utilities Strategy report will collate the design outputs from EON, Wessex Water, Cellnex and Albion Water to demonstrate the site-wide utilities strategy for the Proposed Development.

17.9 Accidents and Disasters

17.9.1 Schedule 4 to the EIA Regulations requires an ES to include "*a description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned*". The new IEMA primer (September 2020) also provides a guide to the consideration of Major Accidents and Disasters (MA&D) in EIA. The primer provides an assessment methodology based on current UK practise and identifies key terminology.

17.9.2 Although only the resulting expected significant adverse environmental effects (together with any required prevention, preparedness, mitigation and response measures) need to be addressed within an ES, it is first necessary to identify a project's vulnerability (i.e., identification of relevant risks). The second stage is then to determine whether this would result in likely significant environmental effects.

17.9.3 The terms risk, vulnerabilities, major accidents and disasters are all undefined within the 2017 EIA Regulations. To remain proportionate, consideration of this topic should focus on the risks of major accidents and/or disasters which have the potential to result in serious damage, which for this EIA is considered to be the loss of life or permanent injury and/or permanent or long-lasting damage to an environmental receptor which cannot be restored through minor clean up and restoration efforts.

17.9.4 In determining whether MA&D would result in the need for EIA, concise consideration of the following questions has been taken into account.

- Is the development a source of hazard itself that could result in a major accident and/or disaster occurring?
- Does the development interact with any sources of external hazards that may make it vulnerable to a major accident and/or disaster?
- If an external major accident and/or disaster occurred, would the existence of the development increase the risk of a significant effect to an environmental receptor occurring?

17.9.5 These questions help identify whether a development has a vulnerability to MA&D and to consider whether a development could lead to a significant effect.

Potential Effects

17.9.6 Taking account of the location and characteristics of the Proposed Development, and the likelihood of significant environmental effects outlined in this scoping report, the only major risks identified relate to:

- Potential accidents during the construction phase resulting in disturbance, injuries and/or fatalities to construction workers or members of the public;
- A major flood event that could flood areas of built development or essential infrastructure;
- Road traffic accidents; and

- Pollution incidents to ground and watercourses during the construction phase, resulting in potential pollution migration and adverse effects on specific receptors including soils, habitats, and species.

17.9.7 As detailed within this Scoping Report, mitigation will be included within the Proposed Development to address these risks and manage potential environmental effects. Health and safety is a key consideration in the construction sector and will be managed in accordance with legal requirements and best practice.

17.9.8 The Proposed Development will be sensitively designed to respond to local flood risk and will include SuDS to mitigate the effects of the Proposed Development on the local drainage regime. As such the Proposed Development will be unlikely to experience significant effects in relation to flood risk.

17.9.9 The impacts of the Proposed Development on road traffic accidents will be assessed within the ES Transport and Access chapter. This will include an analysis of personal injury collision from the local area which will be used to identify potential significant adverse effects and mitigation measures necessary to reduce these effects to an acceptable level.

17.9.10 Potential major risks related to the Proposed Development are therefore considered to be addressed and the Proposed Development is not considered to be vulnerable, in relation to the EIA Regulations, to major accidents and/or disasters with the potential to lead to significant adverse environmental effects.

17.9.11 MA&D can be scoped out if there is no source-pathway-receptor linkage of a hazard that could trigger a MA&D or significant environmental effect, or if all MA&D are covered elsewhere in the assessment, design measures, legal compliance or best practise.

17.9.12 As a result, it is proposed that the risks from major accidents and/or disasters is scoped out of the ES.

18 Summary and Next Steps

18.1 Summary

18.1.1 This Scoping Report has been prepared to inform the Scoping Opinion that will be issued by SDC following consultation with relevant consultation bodies. It explains how Gravity will ensure that the ES identifies and assesses the likely significant environmental effects of the Proposed Development.

18.1.2 This Scoping Report provides information regarding the Proposed Development, sets out the intended ES scope and methodologies for the assessment of likely significant environmental effects, and outlines the content of the ES.

18.1.3 The EIA process of which the ES forms part will seek to ensure that the LDO is not adopted until an assessment of likely significant effects of the whole project has been undertaken on the basis of information provided in the ES, supplemented as appropriate by information from consultation bodies and the public.is to protect the environment through minimising adverse environmental effects and to take advantage of opportunities for environmental enhancement. Consideration will be given to mitigation measures through which likely significant environmental effects may be avoided or reduced and, where such measures are identified, to the appropriateness of monitoring measures.

18.2 The Environmental Statement

18.2.1 The ES will be prepared in compliance with the EIA Regulations, and will:

- Describe the Proposed Development;
- Outline the reasonable alternatives considered;
- Describe the baseline environment;
- Identify and assess the likely significant effects;
- Describe the measures to mitigate likely significant adverse effects and consider the appropriateness of related monitoring measures; and
- Includes a non-technical summary.