



Botley West Solar Farm

Preliminary Environmental Information Report

Volume 1

Chapter 19: Cumulative Effects and Inter-relationships

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Approval for issue

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Glossary

Term	Meaning
The Applicant	SolarFive Ltd
The Project	The Botley West Solar Farm (Botley West) Project

Abbreviations

Abbreviations	Meaning
CEA	Cumulative Effects Assessment
EIA	Environmental Impact Assessment
ES	Environmental Statement
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
NPS	National Policy Statement
PEIR	Preliminary Environmental Information Report
ZoI	Zone of Influence

Units

Unit	Description
ha	Hectares
MWe	Megawatts electric – electric output capability of the Project

19 Cumulative Effects and Inter-relationships

19.1 Introduction

- 19.1.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) has been prepared by RPS on behalf of Photovolt Development Partners GmbH. (PVDP) for the Applicant, SolarFive Ltd. (SolarFive). SolarFive is a licence holder under the Electricity Act 1989. SolarFive is also a company registered in England and Wales (company no. 12602740).
- 19.1.1.2 PVDP intends to submit an application on behalf of SolarFive for development consent to the Planning Inspectorate (PINS) under the Planning Act 2008. The proposal is to install and operate approximately 840MWe of solar generation in parts of West Oxfordshire, Cherwell and Vale of White Horse Districts (the Project). The application will be accompanied by an Environmental Statement (ES) prepared in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, as amended (the EIA Regulations), and other required documents including a statement on pre-application consultation.
- 19.1.1.3 This PEIR summarises preliminary results of the assessment to date, before being further refined and reported within the Environmental Statement. The assessment was carried out in accordance with the approach set out in the Scoping Report. The purpose of the PEIR is to inform the statutory consultation process, enabling consultees to understand and comment on the likely significant effects of the Project.
- 19.1.1.4 This chapter of the Preliminary Environmental Information Report (PEIR) presents the findings of the Environmental Impact Assessment (EIA) work undertaken to date for the Project concerning potential cumulative effects and inter-relationships.
- 19.1.1.5 The Cumulative Effects Assessment (CEA) element of this chapter considers effects on environmental receptors from two or more developments which could occur at the same time and which could result in greater effects than if the Project occurred on its own. With regards to the inter-related effects, the PEIR at this stage provides the methodology that will be used for the assessment at the ES stage. Further information on the inter-related effects methodology can be found at **section 19.4** of this chapter.
- 19.1.1.6 This chapter is accompanied by Volume 3: Appendix 19.1: Cumulative Effects Assessment Long List and Short List and Volume 2: Figure 19.1 to Figure 19.3 that show the Cumulative Developments.

19.2 Legislation and Policy

19.2.1 Legislation

- 19.2.1.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (hereafter referred to as 'the EIA Regulations') require the EIA process to consider cumulative and inter-related effects. Cumulative

effects result from multiple actions on receptors and resources over time and are generally additive or interactive (synergistic) in nature.

19.2.1.2 The EIA Regulations state in Schedule 4(5) that an assessment should provide a description of the likely significant effects, including cumulative effects, that could occur as a result of the Project in combination with other developments:

‘(e) the cumulation of effects with other existing and/or approved projects, taking account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;

...

The description of the likely significant effects on the factors specified in regulation 5(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary...effects of the development.’

19.2.1.3 The EIA Regulations (Regulation 5(2)(e)) also require that the EIA process should identify, describe and assess the significant effects in relation to:

‘(e) the interaction between the factors referred to in sub-paragraphs (a) to (d) [being population and human health, biodiversity, land, soil, water, air, climate, material assets, cultural heritage and the landscape.]’

National and Local Planning Policy, and Guidance

National Policy Statements

19.2.1.4 Paragraph 4.1.3 of the Overarching National Policy Statement (NPS) for Energy (EN-1) (Department of Energy and Climate Change (DECC) (2011a)) states that: *‘In considering any proposed development, and in particular when weighing its adverse impacts against its benefits, the Infrastructure Planning Commission [now the Planning Inspectorate] should take into account:*

- *its potential benefits including its contribution to meeting the need for energy infrastructure, job creation and any long-term or wider benefits; and*
- *Its potential adverse impacts, including any long-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts’.*

19.2.1.5 Paragraph 4.2.5 of NPS EN-1 goes on to state that when considering cumulative effects, *‘the Environmental Statement (ES) should provide information on how the effects of the applicant’s proposal would combine and interact with the effects of other development (including projects for which consent has been sought or granted, as well as those already in existence). The IPC [now Secretary of State for Energy Security & Net Zero following a recommendation by Planning Inspectorate] may also have other evidence before it, for example from appraisals of sustainability of relevant NPSs or development plans, on such effects and potential interactions. [...]; and*

19.2.1.6 Paragraph 4.2.6 of NPS EN-1 states that consideration should be given to *‘how the accumulation of, and interrelationship between, effects might affect the environment, economy or community as a whole, even though they may be*

acceptable when considered on an individual basis with mitigation measures in place.'

- 19.2.1.7 There is no guidance relevant to cumulative effects or effect interactions assessment presented within NPS for Renewable Energy Infrastructure EN-3 (DECC, 2011b).

Draft Overarching National Policy Statement for Energy (EN-1)

- 19.2.1.8 The NPSs are currently being updated and draft versions were published for consultation in September 2021 and updated in March 2023.
- 19.2.1.9 Paragraph 4.1.5 of Draft NPS EN-1 (Department for Energy Security & Net Zero, 2023a) states that consideration of the secretary of state should be given to a project's assessment of *'In considering any proposed development, in particular when weighing its [...] potential adverse impacts, including any long-term and cumulative adverse impacts, as well as any measures to avoid, reduce, mitigate or compensate for any adverse impacts, following the mitigation hierarchy.'*
- 19.2.1.10 In respect to the assessment content paragraph 4.2.3 states *'The Regulations require an assessment of the likely significant effects of the proposed project on the environment, covering the direct effects and any indirect, secondary, cumulative... positive and negative effects at all stages of the project, and also of the measures envisaged for avoiding or mitigating significant adverse effects.'*
- 19.2.1.11 In respect to health impacts, paragraph 4.3.5 states *'The impacts of more than one development may affect people simultaneously, so the applicant should consider the cumulative impact on health in the ES where appropriate.'*
- 19.2.1.12 Regarding socio-economic impacts paragraph 5.13.3 states *'The applicant's assessment should consider all relevant socio-economic impacts, which may include: [...] cumulative effects - if development consent were to be granted to for a number of projects within a region and these were developed in a similar timeframe, there could be some short-term negative effects, for example a potential shortage of construction workers to meet the needs of other industries and major projects within the region.'*

Draft National Policy Status for Renewable Energy Infrastructure (EN-3)

- 19.2.1.13 Paragraph 3.10.82 of Draft NPS EN-3 (Department for Energy Security & Net Zero, 2023b) states *'The approach to assessing cumulative landscape and visual impact of largescale solar farms is likely to be the same as assessing other onshore energy infrastructure. Solar farms are likely to be in low lying areas of good exposure and as such may have a wider zone of visual influence than other types of onshore energy infrastructure. However, whilst it may be the case that the development covers a significant surface area, in the case of ground-mounted solar panels it should be noted that with effective screening and appropriate land topography the area of a zone of visual influence could be zero.'*
- 19.2.1.14 Paragraph 3.10.113 of Draft NPS EN-3 states *'Where a cumulative impact is likely because multiple energy infrastructure developments are proposing to*

use a common port and/or access route and pass through the same towns. And villages, applicants should include a cumulative transport assessment as part of the ES. This should consider the impacts of abnormal traffic movements relating to the project in question in combination with those from any other relevant development. Consultation with the relevant local highways authorities is likely to be necessary.'

National Planning Policy Framework

- 19.2.1.15 Although the National Planning Policy Framework (NPPF) (Department for Energy Security & Net Zero, 2023c) does not contain specific policies for Nationally Significant Infrastructure Projects (NSIPs), it can still be a material consideration. The following statements are relevant to this assessment.
- 19.2.1.16 Paragraph 49 of the NPPF states '*However, in the context of the Framework – and in particular the presumption in favour of sustainable development – arguments that an application is premature are unlikely to justify a refusal of planning permission other than in the limited circumstances where both:*
 - a) *the development proposed is so substantial, or its cumulative effect would be so significant, that to grant permission would undermine the plan-making process by predetermining decisions about the scale, location or phasing of new development that are central to an emerging plan; and...*
- 19.2.1.17 Paragraph 111 states '*Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.*'
- 19.2.1.18 Paragraph 155 states '*To help increase the use and supply of renewable and low carbon energy and heat, plans should: a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts)...*'

Advice Note 17: Cumulative effects assessment relevant to nationally significant infrastructure projects

- 19.2.1.19 In the absence of a single agreed industry standard method for cumulative effects assessment, PINS issued this guidance document (Planning Inspectorate, 2019) outlining a suitable methodology for NSIP projects. This methodology has been taken into account in **section 19.4**.

Local Planning Policy

- 19.2.1.20 There is no local planning policy concerning cumulative effects.

19.3 Consultation and Engagement

- 19.3.1.1 On 4 April 2023, the lead Planning Policy & Implementation Officer at West Oxfordshire District Council was contacted to review the cumulative methodology along with the CEA long list. This was distributed to the other councils to get an agreed comprehensive long list.

- 19.3.1.2 In June 2023 a Scoping Report was submitted to the Planning Inspectorate, which described the scope and methodology for the technical studies being undertaken to provide an assessment of any likely significant effects and, where necessary, to determine suitable mitigation measures for the construction and operational phases of the Project. It also described those topics or sub-topics which are proposed to be scoped out of the EIA process and provided justification as to why the Project would not have the potential to give rise to significant environmental effects in these areas.
- 19.3.1.3 Following consultation with the statutory bodies, the Planning Inspectorate (on behalf of the Secretary of State) provided a Scoping Opinion on the 24 July 2023.
- 19.3.1.4 Key issues raised during the scoping process specific to cumulative effects and inter-relationships are listed in **Table 19.1**, together with details of how these issues have been addressed within the PEIR.

Table 19.1: Summary of scoping opinion, and Applicant responses

Comment	How and where considered in the PEIR
Planning Inspectorate	
<p>ID 3.12.2: The ES should explain the methodology for defining both the short list of developments identified and justify the omission/inclusion of developments for each cumulative assessment. This should be informed by appropriate consultation with the relevant bodies.</p>	<p>The methodology is set out in Section 19.4 of this chapter and also Chapter 4: Approach to Environmental Assessment in Volume 1.</p>
<p>ID 3.12.2: The ES should explain how the inter-relationships assessed have been identified and explain the methodology for assessment.</p>	<p>The methodology is set out in Section 19.4 of this chapter</p>
<p>ID 3.12.2: The Applicant’s attention is drawn to the consultation response from the Environment Agency (Appendix 2 of this Opinion) regarding the overlap of the Proposed Development with the Thames Valley Flood Scheme. The ES should provide clarity on this overlap, should it remain, and any interactions/impacts between the two developments.</p>	<p>This development is in the long list (Appendix 19.1) but is not assessed further in the short list as it is not considered to cause impact.</p>
<p>ID 3.12.2: ‘To be able to visualise the cumulative impact of developments in the area, BPC would like to request that the ES include a plan that shows the Project in relation to not only all the approved and proposed residential developments in the area, but also to the approved and proposed solar farms and other non-residential developments in the area, such as, for example, the proposed Park and Ride on the A44 near the Bladon Roundabout. In addition to these proposed developments, the plan should also include developments built/being built but not yet showing on the OS base map being used. They should also show the built solar farms already in the area as, unlike residential developments, the OS base map does not show these types of developments and it could be assumed that these areas are undeveloped and still open countryside.’</p>	<p>The long list has included these developments and Figure 19.1 has been created to show approved and proposed developments and solar farms where appropriate.</p>
<p>ID 3.12.2: Council draws PINS attention to the fact that the proposed southern site lies immediately adjacent to, and south of, another proposed solar power station (Red House Farm) where the Vale of White Horse District Council (VWHDC) has required an extensive set of Environmental Impact Assessments be carried out (P22/V2581/SCO).</p>	<p>This has been included in the short list (Table 19.4).</p>

Comment	How and where considered in the PEIR
<p>ID 3.12.2: The Scoping Opinion request does not list any sites that it may consider for cumulative impacts. Paragraph 7.2.35 [of the EIA Scoping Report] refers to ‘large’ but doesn’t define what this may be. There are also potential sequential Cumulative Impacts with other existing and proposed solar and other development in the Oxford Green Belt, especially those sites that the Oxford Green Belt Way passes. This area of the Oxford Green Belt contains numerous rights of way with limited detractors and is a key recreational resource to Oxford and surrounding urban areas.</p>	<p>The long list has included these developments and Figure 19.1 has been created to show approved and proposed developments and solar farms where appropriate</p>
<p>ID 3.12.2: Said to be away from main settlements but sites between several existing settlements which have or are due to be extended in current LP’s filling in surrounding area with differing development (5.4.6) (paragraph 7.12.2 of the EIA Scoping Report) including 4,000 homes. Long term aggregated environmental effect must be considered together with disruption. GB land will almost totally be filled between Yarnton and Long Hanborough (Figure 2), resulting in complete loss of amenity for residents.</p>	<p>Appendix 19.1 provides the longlist and shortlist.</p>

19.4 Assessment Methodology

19.4.1 Study Area

19.4.1.1 The study area, or Zone of Influence (Zol), for the CEA and assessment of inter-relationships is based primarily on the study areas for each topic area for the Project as well as the study areas for each of the other developments. Further information on the Zols used in this assessment is presented in **Table 19.3**.

19.4.2 Methodology

19.4.2.1 The CEA methodology is primarily based on the process set out in the Planning Inspectorate Advice Note Seventeen (Planning Inspectorate, 2019) which consists of a four stage process. The four stage process and how this has been progressed is outlined in **Table 19.2**.

Table 19.2: Summary of the Four Stage Approach to CEA

CEA Stage	Activity
<p>Stage 1</p>	<p>Identify a long list of ‘other developments’ using the tiered approach (see Table 19.3). In order to do this, the Zol for each topic area has been identified which forms the basis of the search area. The developments included in the long list have been included along with important information and the assigned tier.</p>
<p>Stage 2</p>	<p>From the long list, develop a short list of ‘other developments’ which are considered within the CEA. Inclusion/exclusion criteria outlined below used to define the short list. The short list has been consulted upon with statutory and non-statutory consultees during the EIA process.</p>
<p>Stage 3</p>	<p>A desk study has been undertaken to gather the appropriate environmental information (if available) for the identified ‘other developments’ in the short list.</p>

CEA Stage	Activity
Stage 4	An assessment of the likely cumulative effects. The apportionment of effect between the Project and the 'other developments' is considered, eg whether the contribution to the effect is demonstrably related to one development or whether there is an equal contribution from either development.

Stage 1

19.4.2.2 The Zol for each topic area has been identified primarily based on the extent of likely effects. Each topic area has used topic-specific guidance along with professional judgement and knowledge of the local area to define the geographical Zol. The identified Zols are presented in **Table 19.3**.

Table 19.3: Zone of Influence for Cumulative Effects Assessment

Topic	Zone of Influence
Historic Environment	Built heritage and buried archaeology: 1 km from the site boundary.
Landscape and Visual Resources	Effects on landscape character and visual amenity during construction and operation: 5 km from the site boundary.
Ecology	Effects on Ecology & habitats including nationally and locally designated sites: 5 km from the site boundary.
Ground Conditions	1 km from the site boundary.
Hydrology	1 km from the site boundary.
Traffic and Transport	5 km from the site boundary.
Air Quality	Up to 700 m from construction works. Construction dust effects not expected more than 350 m from construction works.
Noise and Vibration	5 km from the site boundary.
Climate Change	N/A
Socio-Economic	Local study area includes the surrounding local authorities.
Human Health	For initial analysis, data collection has focused on the local authorities. Health-specific data will be tailored in geographic scope to the varying health determinants being assessed, and the requirement of the individual health assessment protocols being applied.
Agricultural Land Use and Public Rights of Way	Agricultural land within the site boundary

19.4.2.3 The types of 'other development' considered in the CEA are set out in **Table 19.4** (adapted from Table 2 of Planning Inspectorate Advice Note Seventeen). The key difficulties in any CEA relate to the level of detail available in relation to 'other developments' and the reliance that needs to be made on environmental assessment carried out by others. For those applications at earlier stages of development or those for which EIA has not been undertaken, professional judgement and knowledge of the study area have been employed to consider the receptors or resources that may be affected by the Project and the 'other developments' in question. Minor household applications have been excluded from the long list.

Table 19.4: 'Other Developments' for Inclusion in the CEA (adapted from Planning Inspectorate, 2019)

Tier	Description	
Tier 1	Under construction (however, where projects are expected to be completed before construction of the Project and the effects of those projects are fully determined, effects arising from them should be considered as part of the baseline).	Decreasing level of detail likely to be available as you move down the tiers.
	Permitted application(s) but not yet implemented.	
	Submitted application(s) but not yet determined.	
Tier 2	Planning application(s) where a scoping report has been submitted.	
Tier 3	Projects on the planning register where a scoping report has not yet been submitted.	
	Sites identified in the relevant Local Development Plans (and emerging Local Development Plans – with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposal will be limited.	
	Other plans and programmes (as appropriate) which set the framework for future development consent/approval, where such development is reasonably likely to come forward.	

19.4.2.4 The long list identified using the above methodology is presented in Appendix 19.1. Each development on the long list has been assigned a tier based on **Table 19.4**.

19.4.2.5 This list will be updated periodically during the EIA process, informed by consultation and modelling confirming the extent of study areas, and will be finalised approximately three months prior to the submission of the application for development consent.

Stage 2

19.4.2.6 The following criteria have been used in screening developments for inclusion in the short list. These criteria, however, are not exhaustive or wholly prescriptive: expert judgement by the EIA team has also been applied throughout the CEA process. The following developments have been included in the short list.

- EIA developments or those where an un-determined EIA screening or scoping request indicated the possibility of significant environmental effects was foreseen.
- 'Major developments', where identified as such on the planning register, or which have the potential to result in cumulative effects (based on professional judgement).
- Developments whose scale, nature or location suggests potential for particular cumulative effects - eg an industrial or combustion process as a source of air or water pollutant or noise emissions, a potential large traffic

generator such as distribution warehouse or retail park, or a development in proximity to a designated site or other asset.

- Completed developments that may not be captured in baseline studies (eg due to very recent start of operation).
- Developments that introduce sensitive receptors for which the assessment of effects on existing sensitive receptors identified through baseline study and included in the assessment of a particular environmental impact would not be representative.

19.4.2.7 The short list is summarised in **Table 19.5** and the locations of the short listed developments are shown on Figures 19.1, 19.2 and 19.3. Developments not meeting these inclusion criteria and/or not considered to have potential for cumulative effects have been screened out of the short list.

Table 19.5: Summary of Short List of 'Other Developments' Identified for CEA

Project Name	Application Number	Description	Distance from Project (km)
Tier 1			
Salt Cross Garden Village	20/01734/OUT	2,200 dwellings and 40ha of employment land	Adjacent
West Eynsham Strategic Development Area (Eynsham Nursery)	15/00761/FUL	77 dwellings (allowed at appeal)	1.5
West Eynsham Strategic Development Area (Land west of Thornbury Road)	18/01009/RES	160 dwellings	1.5
Land east of Woodstock	16/01364/OUT	300 residential dwellings, up to 1100sqm of A1/A2/B1/D1 floorspace;	Adjacent
Land north of Hill Rise, Woodstock	21/00189/FUL	180 dwellings (refused but at appeal in July 23)	1.0
Land north of Banbury Road, Woodstock	21/00217/OUT	235 dwellings with community space and car barns	0.3
Land south of Witney Road, Long Hanborough	14/1234/P/OP	Erection of up to 169 dwellings, with new Doctors Surgery (allowed at appeal)	1.9
Land north of Witney Road, Long Hanborough	22/01330/OUT	150 dwellings	2.2
Land south east of Pinsley Farm	17/03155/RES	120 dwellings	Adjacent
Twelve Acre Farm - Solar Farm	19/02516/FUL	31.9 MW peak. Up to 10 batteries in shipping containers. Up to 10 inverters in shipping containers.	2.5

Project Name	Application Number	Description	Distance from Project (km)
		Internal access tracks, perimeter fence, CCTV cameras.	
Land Between Woodstock Sewage Works And B4027 - Solar Farm	20/01817/FUL	5MW generating capacity on 9.1ha of land	Adjacent
Salutation Farm - Solar Farm	13/1277/P/FP	13.2MW. 52,800 free standing solar panels	3.5
Land at Bicester Road, Kidlington	22/00747/OUT	Outline planning application for the development of up to 370 homes, public open space (including play areas and woodland planting), sports pitches and pavilion, drainage and engineering works, with all matters reserved (appearance, landscaping, layout and scale) except for vehicular and emergency accesses to Bicester Road	3.0
West of Rutten Lane Yarnton	21/03522/OUT	The erection of up to 540 dwellings (Class C3), up to 9,000sqm GEA of elderly/extra care residential floorspace (Class C2), a Community Home Work Hub (up to 200sqm)(Class E), alongside the creation of two locally equipped areas for play, one NEAP, up to 1.8 hectares of playing pitches and amenity space for the William Fletcher Primary School, two vehicular access points, green infrastructure, areas of public open space, two community woodland areas, a local nature reserve, footpaths, tree planting, restoration of historic hedgerow, and associated works. All matters are reserved, save for the principal access points.	Adjacent
Land south of Perdiswell Farm, Shipton Road	22/01715/OUT	Erection of up to 500 dwellings with associated access, open space and infrastructure	Adjacent
OS Parcel 4347 East of Pipal Cottage, Oxford Road, Kidlington	23/01233/OUT	Outline application (with all matters except access reserved) for up to 800 dwellings, two form entry primary school, a local centre, business uses and public open space, new access and associated transport infrastructure	4.0
Flit Solar Farm, off Woodstock Road, Yarnton	14/00786/F	Construction of a Solar Farm with on site equipment rooms and plant, access improvement and on-site tracks, security fencing and thermal imaging system, landscaping and associated works	2.0
Tier 2			
Cumnor Solar Farm	P23/V0306/SC R	Request for an EIA Screening Opinion prior to the submission of an application for the installation of a 13MW solar photovoltaic array and battery storage facility	1.5
Land to the west of Red House Farm, Botley, OX2 9ND	P22/V2581/SC O	Request for a Scoping Opinion for a proposed 49.99MW solar scheme	Adjacent

Project Name	Application Number	Description	Distance from Project (km)
Land to the west of Red House Farm, Botley, OX2 9ND	P22/V0144/SC R	Request for an EIA Screening Opinion prior to the submission of an application for the installation of a solar photovoltaic array	Adjacent
Tier 3			
Salt Cross Garden Village Strategic Location for Growth	20/01734/OUT	2,200 dwellings and 40ha of employment land	Adjacent
West Eynsham Strategic Development Area	N/A	1,000 dwellings	1.5
Land east of Woodstock	N/A	300 dwellings	Adjacent
Land north of Hill Rise, Woodstock	N/A	120 dwellings	1.0
Land north of Banbury Road, Woodstock	N/A	180 dwellings	0.3
Land at Pinsley Wood	N/A	600 dwellings (call for sites - strategic promotion)	Adjacent
Land east of Oxford Road	N/A	690 dwellings and associated infrastructure	4.0
Land west of Oxford Road	N/A	670 dwellings and associated infrastructure	4.0
Land south east of Kidlington & Land at Stratfield Farm	N/A	430 dwellings and associated infrastructure	3.0
Land east of A44	N/A	1950 dwellings and associated infrastructure	Adjacent
Land west of Yarnton	N/A	540 dwellings and associated infrastructure	Adjacent
New football stadium Oxford City FC	N/A	New football stadium for Oxford City FC. No application submitted yet but one is expected imminently on PR6b allocation	4.0

Stage 3

- 19.4.2.8 A desk study search of the environmental information available for each of the 'other developments' listed in the short list has been undertaken. This included searching on Local Planning Authorities and the Planning Inspectorate websites. The information gathered has been used to identify the likely significant cumulative effects.

Stage 4

- 19.4.2.9 The CEA does not aim to assign significance levels (such as negligible, minor, moderate or major) for the identified effects. Instead the assessment is used to identify where there is the potential for cumulative effects to occur and to

provide details of whether cumulative effects are likely to be significant or not. A statement is made as to whether the cumulative effect would be worse or better than the effects predicted for the Project alone, whether the cumulative effects have the potential to be more significant than the effects of the Project alone and, if so, whether this would be adverse or beneficial.

19.4.2.10 Each topic assessed as part of the EIA process has considered the ‘other developments’ from the short list which could result in significant effects. Each topic has based this selection on the location, nature and status of each development and provided a table justifying the inclusion of each development in their assessment. Chapters 7 to 18 provide an assessment on the likely significant cumulative effects. This chapter provides a summary of these assessments.

Inter-relationships

19.4.2.11 As mentioned earlier in this chapter, only the methodology has been described at this stage and the inter- related impact assessment will be covered at the ES stage. This is because the Project design parameters may continue to evolve which will then alter assessments for the individual environmental topics and therefore the inter-relationships between topics.

19.4.2.12 The approach to assessing inter-related effects will also follow a four stage process, albeit different stages to the CEA, as summarised in **Table 19.6** and discussed in the following paragraphs.

Table 19.6: Summary of the Approach for Assessment of Inter-related Effects

Stage	Description
1	Assessments undertaken for individual EIA topic areas within the PEIR.
2	Review of the likely receptor(s)/resource(s) affected by more than one impact through analysis of the assessment of effect sections undertaken for individual PEIR topic areas.
3	Identification of potential combined effects on these receptor groups through review of the topic-specific assessments in the PEIR chapters.
4	Assessment undertaken on how individual effects may combine to create inter-related effects on each receptor group for ‘Project lifetime effects’ and ‘receptor led effects’.

Stage 1: Topic-specific Assessments

19.4.2.13 The first stage of the assessment of inter-related effects has been presented in each of the individual topic chapters (Chapters 7 to 18 of this PEIR) and comprises the individual assessments of effects on receptors across the construction and operational phases of the Project.

Stage 2: Identification of Receptor Groups

19.4.2.14 Stage 2 will involve a review of the assessments undertaken in the topic-specific chapters to identify ‘receptor groups’ requiring assessment within the inter-related effects assessment. The term ‘receptor group’ is used to highlight that the approach taken for the inter-related effects assessment does not assess every individual receptor assessed during the EIA process, but rather

potentially sensitive groups of receptors. The receptor groups can be broadly categorised as follows:

- landscape and visual resources: designated sites; landscape character; visual receptors (residents, users of public rights of way, other visual receptors);
- historic environment: buried archaeology; designated heritage assets; settings of heritage assets;
- land use and recreation: agricultural land; farm businesses; users of recreational facilities (eg Public Rights of Way (PRoW));
- socio-economics: employment levels; housing and other local services; tourism;
- ecology and nature conservation: ecologically designated sites; important habitat features; protected species;
- traffic and transport: road users; residents;
- noise and vibration: residents;
- air quality: residents;
- health: residents in the local area;
- climate change; and
- water environment: surface water bodies; flood risk (residents, other land uses).

Stage 3: Identification of Potential Inter-related Effects on Receptor Groups

19.4.2.15 Consideration would then be given to the potential for inter-related effects to arise for each of the identified receptor groups across the Project phases (i.e. Project lifetime effects) as well as the interaction of multiple effects on a receptor (i.e. receptor-led effects), as defined below.

- Project lifetime effects – assessment of the scope for effects that occur throughout more than one phase of the Project (construction, operation and maintenance and decommissioning) to interact to potentially create a more significant effect on a receptor than if assessed in isolation.
- Receptor-led effects – assessment of the scope for multiple effects to interact, spatially and temporally, to create inter-related effects on a receptor or receptor group. As an example, multiple effects on a given receptor, such as local residents, could include construction dust and noise, increased traffic and visual change which may interact to produce a greater effect on this receptor than when the effects are considered in isolation. Receptor-led effects might be short term, temporary, or incorporate longer term effects.

Stage 4: Assessment of the Inter-related Effects on Each Receptor

- 19.4.2.16 Individual effects on each of the receptor groups identified above will be then considered. A descriptive assessment of the scope for these individual effects to interact to create a different or greater effect will be then undertaken. The assessment will be undertaken qualitatively based on the information available for the Project. Professional judgement will be used to identify the likely inter-related effects that could occur at identified receptor locations. The assessment will not assign significance levels but instead a statement will be made as to whether the inter-related effects would be worse or better than the effects considered alone, and if so, whether this would be adverse or beneficial.

19.5 Assumptions and Limitations of Cumulative Assessment

- 19.5.1.1 The assessment of cumulative effects is based on the short listed developments and publicly available information. The short list of developments will regularly be updated. However, an appropriate cut off at September 2023 has been applied prior to publication of the PEIR to allow the assessment to be finalised. Therefore, any new applications which come forward after the cut -off have not been included in the PEIR but will be brought forward to the ES. Where further information becomes available on developments already considered, this will be taken into account before the ES is finalised. However, it is noted that new developments coming forward after the cut-off date for the ES could be considered during the examination period if considered necessary and appropriate by the Examining Authority.
- 19.5.1.2 As with any assessment of cumulative effects, the outcome is based on the amount of information available for each other developments on the short list. The level of information available depends on which stage in the planning process the development is at: i.e. those for which an application has been submitted will have more information available compared to allocations in a local development plan. Similarly, the likelihood of a development coming forward is also highly dependent on the corresponding stage in the planning process. To overcome this, greater weight is given to those developments for which more information is available and is more likely to come forward. Any developments with limited information available, reasonable worst case parameters have been assumed in the assessment. Any mitigation measures presented in planning applications or other planning documents for the 'other developments' are assumed to be brought forward in an application (if the application hasn't yet been submitted) and implemented by the applicant (should planning permission be granted).

19.6 Cumulative Effects Assessment

- 19.6.1.1 An assessment of cumulative effects has been undertaken and the results are presented in each of the topic chapters of this PEIR (Chapters 7 to 18). A summary of these effects is presented in **Table 19.7**.

Table 19.7: Summary of Cumulative Effects Assessment

Assessment Phase	Summary	Potential for Significant Effects?
Historic Environment		
Construction	No cumulative effects have been identified.	No significant effects considered likely.
Operation and Maintenance		
Decommissioning		
Landscape and Visual Resources		
Construction	No cumulative effects have been identified	No significant effects considered likely.
Operation and Maintenance		
Decommissioning		
Ecology and Nature Conservation		
Construction	Wintering bird assemblage	Moderate adverse
Operation and Maintenance	No cumulative effects have been identified	No significant effects considered likely.
Decommissioning		
Hydrology and Flood Risk		
Construction	No cumulative effects have been identified	No significant effects considered likely.
Operation and Maintenance		
Decommissioning		
Ground Conditions		
Construction	No cumulative effects have been identified	No significant effects considered likely.
Operation and Maintenance		
Decommissioning		
Traffic and Transport		
Construction	The PEIR chapter sets out the initial traffic and transport study area, the key highway links within this, estimations on the typical daily number of construction vehicle movements and preliminary EIA. Given the nature of other projects and plans evolving as they emerge and progress through the planning process, this evolves the traffic flows generated by those projects and plans accordingly. As such, as the EIA is undertaken, a CEA with these other projects and plans can be undertaken. Full details of the CEA will be set out at ES stage.	
Operation and Maintenance		
Decommissioning		
Noise and Vibration		
Construction	No cumulative effects have been identified	No significant effects considered likely.
Operation and Maintenance		
Decommissioning		
Climate Change		
Construction	Cumulative effects due to other specific local development projects cannot be individually identified and assessed, therefore no relevant cumulative effects assessment has been completed for the climate change chapter.	
Operation and Maintenance		
Decommissioning		

Assessment Phase	Summary	Potential for Significant Effects?
Socio-economics		
Construction	The cumulative assessment for socio economic will be covered at ES stage. The ES will consider and extend the analysis of each socioeconomic impact identified in the PEIR in relation to the other developments identified in the cumulative developments list.	
Operation and Maintenance		
Decommissioning		
Human Health		
Construction	No cumulative effects have been identified	No significant effects considered likely.
Operation and Maintenance		
Decommissioning		
Agricultural Land Use and Public Rights of Way		
Construction	Permanent loss of BMV agricultural land	Major Adverse
	The temporary disruption or reduced access to PRow (footpaths and bridleways).	Moderate adverse (footpaths and bridleways) (Significant)
Operation and Maintenance	No cumulative effects have been identified	No significant effects considered likely.
Decommissioning		
Waste and Resources		
Construction	The cumulative effects assessment has not been undertaken at the PEIR stage as the types and quantities of waste from the Project and the resources required have not been defined. As the design of the Project is refined following the statutory consultation, potential cumulative effects with other projects will be assessed at ES stage.	
Operation and Maintenance		
Decommissioning		

19.7 Summary

- 19.7.1.1 This chapter considers the cumulative effects arising from the Project during the construction and operation and maintenance and decommissioning phases. The cumulative assessment uses a short list of ‘other developments’ which could result in cumulative effects on the same receptors as the Project.
- 19.7.1.2 The CEA concludes that significant effects are not likely in relation to many of the topic areas. Significant effects could occur in relation to permanent loss of BMV agricultural land during construction of the Project and other Tier 1 and Tier 2 projects, this is considered major adverse. No further significant effects are considered likely.

19.8 Next Steps

- 19.8.1.1 The long list and short list of other developments to inform the CEAs will continue to be updated throughout the EIA process. Any additional developments that have been identified through the consultation process and during the drafting of the ES will be added to the long list and reviewed for

inclusion in the short list. A cut-off date of three months before submission of the application will be implemented to allow for the final preparation of the ES.

- 19.8.1.2 The assessment of inter-relationships will be carried out at ES stage following finalisation of the design parameters and the full assessment of effects in the topic chapters.

19.9 References

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