SUNNICA ENERGY FARM

EN010106

Volume 6

Environmental Statement

6.1 Chapter 17: Effect Interactions

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

18 November 2021
Version number: 00

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Sunnica Energy Farm

Environmental Statement
Chapter 17: Effect Interactions

Regulation Reference:	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	EN010106
Application Document Reference	EN010106/APP/6.1
Author	Sunnica Energy Farm Project Team

Version	Date	Status of Version
Rev 00	18 November 2021	Application Version

Table of contents

Table of Tables

17 Effect Interactions

17.1 Introduction

17.1.1 This chapter addresses the potential for effect interactions and cumulative effects as a result of the Scheme.

17.1.2 Effect interactions may arise where combinations of impacts, which have been identified as part of the assessments reported within **Chapters 6** to **16** of this Environmental Statement **[EN010106/APP/6.1]**, are considered likely to result in a new or different likely significant effect, or an effect of greater significance, than any one of the impacts on their own. This can happen during construction for example if a receptor is subjected to noise, dust, and visual impacts associated with site works.

17.1.3 Cumulative effects are where there is the potential for two or more developments that are reasonably foreseeable and/or consented, but not yet constructed or operational, within close enough proximity to the Scheme to lead to effects on the same receptor. Such cumulative effects have been assessed within technical **Chapters 6** to **16** of this Environmental Statement **[EN010106/APP/6.1]**. However, a summary of the outcomes of these assessments is provided in **Table 17-6** of this chapter. A detailed description of the assessment methodology for cumulative effects can be found in **Chapter 5: EIA Methodology** of this Environmental Statement **[EN010106/APP/6.1]**.

17.2 Legislative Context

Effect Interactions

17.2.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 17-1) makes explicit reference to the requirement for an assessment of the effect interactions between types of effect in Regulation 5(2). This states that the EIA must *"identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors:*

a. population and human health;

b. biodiversity, with particular attention to species and habitats protected under any law that implemented 1Directive 92/43/EEC2 and Directive 2009/147/EC3;

c. land, soil, water, air and climate;

d. material assets, cultural heritage and the landscape;

e. the interaction between the factors referred to in sub-paragraphs (a) to (d)."

17.2.2 No further guidance or requirement beyond the need for an assessment of the inter-relationships between types of effect is provided.

Cumulative Effects

17.2.3 The requirement for cumulative impact assessment is clearly stated in the relevant European Directive and legislation. The European Directive 2011/92/EU (Ref 17-2) on the assessments of effects of certain public and private projects on the environment requires the assessment of *"the direct effects and any indirect, secondary, cumulative, short, medium and long term, permanent or temporary, positive and negative effects of the project".*

17.2.4 Schedule 4 paragraph 5 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 requires *"a description of the likely significant effects of the development on the environment resulting from, inter alia: (…) (e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources".*

17.3 Consultation Responses

17.3.1 A summary of scoping opinion requirements, and statutory consultation and responses relating to the interaction of effects and cumulative effects is provided in **Table 17-1**.

Table 17-1: Consultation matters raised and responses for effect interactions and cumulative effects

Consultee	Matter raised	Response
Planning Inspectorate	The Inspectorate notes that paragraph 5.1.4 of the Scoping Report states that cumulative and combined effects will be included within each ES aspect Chapter.	No response required
Planning Inspectorate	The Scoping Report does not clearly set out the position in relation to Worlington quarry. The Scoping Report notes that the construction phase for the Proposed Development is 2022-2025, however the quarry is to be operational until 30 October 2025. The ES should fully assess the cumulative impacts of the construction of the solar farm with the operation/ decommissioning of the quarry. The Applicant should also ensure that the worst-case scenario is assessed in the absence of certainty that the operation of the quarry may not cease.	Worlington Quarry is included in the baseline and therefore considered in the assessments for construction presented in **Chapters 6** to **16** of this Environmental Statement **[EN010106/APP/6.1]**. In the absence of certainty that the operation of the quarry may not cease, the worst-case scenario has been assessed and the operation of the quarry is assumed to continue in the assessments of operation impacts. The restoration for a small area to the east of the Worlington Quarry has been included in the shortlisted schemes considered within the cumulative assessment.

Consultee	Matter raised	Response
Planning Inspectorate	The aspect Chapter omits details on how the cumulative effects will be assessed. This should be addressed in the ES with regards to the potential cumulative effect arising from the Proposed Development and other developments including the Worlington Quarry.	The methodology for the cumulative effects assessment is provided within **Chapter 5: EIA Methodology** of this Environmental Statement **[EN010106/APP/6.1]**. The assessment of cumulative effects for each technical topic is provided in **Chapters 6** to **16** of this Environmental Statement **[EN010106/APP/6.1]** and summarised in this chapter
West Suffolk Council, East Cambridgeshire District Council, Suffolk County Council and Cambridgeshire County Council	Consideration needs to be given to how the combined impacts of topics interact; whether a number of minor adverse impacts would result in a moderate adverse impact in combination.	Effect interactions from multiple topics on a single receptor are considered within this chapter.
West Suffolk Council, East Cambridgeshire District Council, Suffolk County Council and Cambridgeshire County Council	Cumulative traffic impacts need to be taken into account, not just for projects with planning permission but also allocated in local plans.	Cumulative effects from multiple developments and for those allocated in local plans are assessed within each of the technical **Chapters 6** to **16** of this Environmental Statement **[EN010106/APP/6.1]** and summarised in this chapter.
S47 response	The proper assessment of intra-cumulative effects is very important given that there are effectively four sites which must be assessed both independently and collectively.	The Applicant has included an assessment of effect interactions (or intra-project cumulative effects) of the four sites and grid connection route of the Scheme within each of the technical chapters (**6** to **16**) of this Environmental Statement **[EN010106/APP.6.1].**
S47 response	We are concerned about the cumulative visual impact of solar farms in the flat open landscape of our neighbourhood.	The Applicant has assessed the cumulative effects from the four sites and grid connection route of the Scheme and from other developments in the area on landscape and visual in **Chapter 10: Landscape and Visual Amenity** of this Environmental Statement **[EN010106/APP/6.1]**. The results are summarised in this chapter.

17.4 Assessment Methodology

Effect Interactions

17.4.1 The assessment of effect interactions is based on the methodology described in **Chapter 5: EIA Methodology** of this Environmental Statement **[EN010106/APP/6.1]** and considers the potential for several direct or indirect effects arising from the Scheme to give rise to an effect on a single receptor. There are no specific, relevant guidelines on how the assessment of effect interactions should be undertaken, and so the assessment has been undertaken on a qualitative basis using the results of the individual assessments, informed by professional judgement.

17.4.2 Potential sources of environmental effect are not identified specifically in this chapter; this chapter instead draws on the other technical assessments presented in **Chapters 6** to **16** of this Environmental Statement **[EN010106/APP/6.1]** for the identification of receptors, potential effects, and their assessment. The embedded design mitigation and additional mitigation, where proposed in other technical chapters, is assumed to be implemented before consideration of the effects in this chapter. Therefore, residual effects identified in **Chapters 6** to **16** of this Environmental Statement **[EN010106/APP/6.1]** have been considered in this chapter.

17.4.3 To ensure a robust worst-case assessment, landscape and visual residual effects during operation for year 1 (identified in **Chapter 10: Landscape and Visual Amenity** of this Environmental Statement **[EN010106/APP/6.1]** are considered for the effect interactions (as opposed to the Year 15 impacts with full vegetation growth in summer). Similarly, this chapter draws from the other technical chapters for descriptions of aspects of the baseline environment, where required.

17.4.4 Only receptors that are expected to be subject to more than one potential effect have been included in the assessment. Receptors predicted to be affected by only a single effect (e.g. only noise) are excluded because there is considered to be no potential for effect interactions to take place.

Cumulative Effects

17.4.5 The methodology for assessing cumulative effects is set out in **Chapter 5: EIA Methodology** of this Environmental Statement **[EN010106/APP/6.1]**. The methodology has adopted the process identified in the Planning Inspectorate's Advice Note 17 (0), which follows a four stage approach:

a. Stage 1: establish the Scheme's zone of influence (ZoI) and identify a long list of 'other development';

b. Stage 2: identify a shortlist of 'other development' for the cumulative impact assessment;

c. Stage 3: information gathering; and

d. Stage 4: assessment.

17.4.6 A full long list of cumulative development was discussed and agreed with WSC and ECDC. A shortlist has since been identified based on the scale of

the development, temporal overlap, and the cumulative development falling within the Scheme's ZoI identified by the specialist topics. The shortlist of cumulative development is provided in **Appendix 5A** of this Environmental Statement **[EN010106/APP/6.2]**.

17.4.7 Cumulative assessments have been undertaken within each of the technical assessments presented in **Chapters 6** to **16** of this Environmental Statement **[EN010106/APP/6.1]**. The cumulative assessment has been assessed on a topic-by-topic basis rather than scheme-by-scheme as presented in Appendix 2 of the Planning Inspectorate Advice Note 17.

17.4.8 Qualitative assessments have been undertaken to assess cumulative effects, rather than quantitative assessments (where relevant). This is because quantitative assessments would rely on varying methodologies and underlying assumptions used for the other schemes. Therefore, a qualitative cumulative assessment that uses professional judgement is considered appropriate.

17.4.9 Where the Scheme has a negligible effect, there is not considered to be the potential for any cumulative effects. Therefore, the cumulative effects assessment has focused only on minor, moderate, and major impacts identified within the ES.

Significance Criteria for Effect Interactions and Cumulative Effects

17.4.10 The effect interaction is the effect over and above the individual effects assessed in other chapters, and is described as the difference between the change caused to a receptor from one effect alone and the change caused to the receptor from all effects combined. The significance of effect interactions and cumulative effects has been determined in accordance with the criteria set out in **Table 17-2.**

Table 17-2 Criteria for determining the significance of effect interactions and cumulative effects significance

Significance category	Typical descriptors of effect
Significant effect interactions	Where the combined impacts of the Scheme or cumulative impacts of the Scheme along with other developments would likely lead to a change in the significance of effects at a receptor, when compared with considering these impacts in isolation. Consideration of additional mitigation or enhancement measures is required.
No significant effect interactions	Where the combined impacts of the Scheme or cumulative impacts of the Scheme along with other developments are not likely to lead to a change in the significance of effects at a receptor, when compared with considering these impacts in isolation.

17.5 Assessment

Effect Interactions

17.5.1 The interaction of two or more predicted environmental effects resulting from the Scheme may collectively cause a greater (or lesser) effect than each effect in isolation. The potential for effect interactions is assessed within this section.

17.5.2 A detailed matrix of the receptors is provided in **Appendix 17A** of this Environmental Statement **[EN010106/APP/6.2]**. The matrix sets out the residual effects on individual receptors identified in each of **Chapters 6** to **16** of this Environmental Statement **[EN010106/APP/6.1]** and identifies the potential effect interactions arising from the individual impacts. **Appendix 17A** also includes a summary of the effects concluded in each of the technical **Chapters 6** to **16** to provide clarity.

17.5.3 **Table 17-3** below summarises the potential effect interactions during construction.

Table 17-3: Potential effect interactions during construction

Receptor	Description of potential effect interactions	Residual significance of effect determined through EIA	Effect interactions	Additional mitigation required (if any)
Residents and motorists on Ferry Lane (visual receptor 2C), in the vicinity of access E at Sunnica East Site A	Residents and motorists will experience reduced visual amenity (partial change in the composition of the existing view) from the presence of construction plant, HGVs and machinery in the vicinity. The local transport network will experience a higher volume of Heavy Goods Vehicle (HGV) traffic. A low number of accidents were recorded within the vicinity of the Sunnica East Sites A and B accesses. The construction staff and HGV traffic will travel outside of the highway peak hours. An overall significance of effect on vehicle travellers in terms of accidents and safety is considered minor adverse during the construction period. The combination of these impacts has the potential to result in effect interactions. There is the potential for the reduced visual amenity to be exacerbated by the increased number of HGVs visible on the road network. Additional pressure on the residential receptors could arise from stress and potential delays from the additional traffic on the road network. These effect interactions could result in an increase in 'annoyance' amongst residents. This will be temporary.	Visual (moderate adverse) Transport and Access (minor adverse)	**No significant effect interactions:** The difference between the visual amenity effects on motorists and the overall change in-combination with the minor effects anticipated on vehicle traveller accidents and safety is expected to be a detectable but non-material change. This effect interaction is not expected to increase the significance of effects anticipated at this receptor in **Chapters 6-16** of this Environmental Statement **[EN010106/APP/6.1].**	No additional mitigation outside of that proposed within the Framework Construction Environmental Management Plan (CEMP) in **Appendix 16C** of this Environmental Statement **[EN010106/APP/6.2]** is proposed. The effect interaction will be temporary, and mitigation has already been included as part of the design as embedded mitigation.
Motorists on Beck Road (visual receptor 5)	As above	Visual (moderate adverse) Transport and Access (minor adverse)	As above	As above
Motorists on Ferry Lane	As above	Visual (moderate adverse)	As above	As above

Receptor	Description of potential effect interactions	Residual significance of effect determined through EIA	Effect interactions	Additional mitigation required (if any)
(visual receptor 12A)		Transport and Access (minor adverse)		
Motorists on Ferry Lane (visual receptor 12B)	As above	Visual (moderate adverse) Transport and Access (minor adverse)	As above	As above
Motorists on Golf Links Road (visual receptor 24)	As above	Visual (moderate adverse) Transport and Access (minor adverse)	As above	As above
Motorists on Elms Road (visual receptor 18)	As above	Visual (moderate adverse) Transport and Access (minor adverse)	As above	As above
Motorists on Weirs Drove (visual receptor 53)	As above	Visual (moderate adverse) Transport and Access (minor adverse)	As above	As above

Receptor	Description of potential effect interactions	Residual significance of effect determined through EIA	Effect interactions	Additional mitigation required (if any)
Recreational users of Public Right of Way (PRoW) 257/002/0 (visual receptor 9A)	Recreational users of the PRoW network will experience reduced visual amenity (partial change in the composition of the existing view) from the presence of construction plant and machinery in the vicinity. Recreational users of the PRoW network affected by construction activities and closures will experience disruption from temporary route closure, pedestrian delay and amenity (including noise). Closures of PRoW will be for no longer than three weeks. As a result of temporary construction activity and PRoW closures during construction, it is likely that these impacts may discourage walkers from using PRoW, which may have a temporary negative impact on human health. The effects on people discussed above have the potential to lead to effect interactions. The temporary effects from the disruption to PRoW on human health, amenity and access alongside reduced visual amenity could result in an increase in 'annoyance' and stress amongst recreational users. This will be temporary.	Visual (moderate adverse) Transport and Access (minor adverse) Human Health - Social Cohesion and Lifetime Neighbourhoods (minor adverse) Human Health – Air Quality, Noise and Neighbourhoods (neutral)	**No significant effect interactions:** The difference between the visual effects on PRoW users and the overall change in-combination with the minor effects anticipated from disruption to the PRoW network and human health is expected to be a detectable but non-material change. This effect interaction is therefore not expected to increase the significance of effects anticipated at this receptor in **Chapters 6** to**16** of this Environmental Statement **[EN010106/APP/6.1]**.	No additional mitigation outside of that proposed within the Framework Construction Environmental Management Plan (CEMP) in **Appendix 16C** of this Environmental Statement **[EN010106/APP/6.2]** is proposed. The temporary closures of PRoW will be supported by appropriate and clearly signed alternative routes and where possible will be planned and programmed to minimise disruption to users. The effect interaction will be temporary, and mitigation has already been included as part of the design as embedded mitigation.

Receptor	Description of potential effect interactions	Residual significance of effect determined through EIA	Effect interactions	Additional mitigation required (if any)
Recreational users of PROW 257/002/0 (visual receptor 11)	As above	Visual (major adverse) Transport and Access (minor adverse) Human Health (minor adverse)	As above	As above
Recreational users PRoW (bridleway) 204/5, south-east of Snailwell (visual receptor 41)	As above	Visual (major adverse) Transport and Access (minor adverse) Human Health (minor adverse)	As above	As above
Recreational users on PRoW (footpath) 204/1 (visual receptor 45)	As above	Visual (major adverse) Transport and Access (minor adverse) Human Health (minor adverse)	As above	As above
Recreational users on ProW (footpath) 49/7 (visual receptor 29)	As above	Visual (moderate adverse) Transport and Access (minor adverse) Human Health (minor adverse)	As above	As above

Receptor	Description of potential effect interactions	Residual significance of effect determined through EIA	Effect interactions	Additional mitigation required (if any)
Recreational users including equestrian riders on U6006 (visual receptor 15A)	As above	Visual (major adverse) Transport and Access (minor adverse) Socio-economics (minor adverse) Human Health - Social Cohesion and Lifetime Neighbourhoods (minor adverse) Human Health – Air Quality, Noise and Neighbourhoods (neutral)	As above	As above
Recreational users including equestrian riders on U6006 (visual receptor 15B)	As above	Visual (major adverse) Transport and Access (minor adverse) Socio-economics (minor adverse) Human Health (minor adverse)	As above	As above
Recreational users including equestrian riders on U6006 (visual receptor 16)	As above	Visual (major adverse) Transport and Access (minor adverse) Socio-economics (minor adverse)	As above	As above

Receptor	Description of potential effect interactions	Residual significance of effect determined through EIA	Effect interactions	Additional mitigation required (if any)
		Human Health (minor adverse)		
Recreational users on PRoW W257/003/0	As above	Visual (major adverse) Transport and Access (minor adverse) Socio-economics (minor adverse) Human Health (minor adverse)	As above	As above
Recreational users on PRoW of way W257/007/0	As above	Visual (minor adverse) Transport and Access (minor adverse) Socio-economics (moderate adverse) Human Health (minor adverse)	As above	As above
Recreational users on PRoW of way W257/002/X	As above	Socio-economics (moderate adverse) Transport and Access (minor adverse) Human Health (minor adverse)	As above	As above

Receptor	Description of potential effect interactions	Residual significance of effect determined through EIA	Effect interactions	Additional mitigation required (if any)
Recreational users on PRoW 92/19	Recreational users of the PRoW network affected by closures will experience disruption through severance, pedestrian delay and amenity due to temporary closures of some PRoW during construction. Closures of PRoW will be for no longer than three weeks. As a result of temporary PRoW closures during construction, it is likely that these impacts may discourage walkers from using PRoW, which may have a temporary negative impact on human health. The effects on people discussed above have the potential to lead to effect interactions. The temporary effects from the disruption to PRoW on human health, amenity and access could result in an increase in 'annoyance' and stress amongst recreational users. This will be temporary	Transport and Access (minor adverse) Human Health (minor adverse)	**No significant effect interactions:** The overall change in-combination from disruption to the PRoW network and human health is expected to be a detectable but non-material change to the effects experienced by the local community. This effect interaction is therefore not expected to increase the significance of effects anticipated at this receptor in **Chapters 6-16** of this Environmental Statement **[EN010106/APP/6.1].**	No additional mitigation outside of that proposed within the Framework Construction Environmental Management Plan (CEMP) in **Appendix 16C** of this Environmental Statement **[EN010106/APP/6.2]** is proposed. The temporary closures of PRoW will be supported by appropriate and clearly signed alternative routes and where possible will be planned and programmed to minimise disruption to users. The effect interaction will be temporary, and mitigation has already been included as part of the design as embedded mitigation.
Recreational users on PRoW 35/10	As above	Transport and Access (minor adverse) Human Health (minor adverse)	As above	As above

Receptor	Description of potential effect interactions	Residual significance of effect determined through EIA	Effect interactions	Additional mitigation required (if any)
Recreational users on PRoW 35/11	As above	Transport and Access (minor adverse) Human Health (minor adverse)	As above	As above
Recreational users on PRoW 35/7	As above	Transport and Access (minor adverse) Human Health (minor adverse)	As above	As above
Recreational users on PRoW 35/6	As above	Transport and Access (minor adverse) Human Health (minor adverse)	As above	As above

Receptor	Description of potential effect interactions	Residual significance of effect determined through EIA	Effect interactions	Additional mitigation required (if any)
Local economy – Employment generation	The impact of construction employment generation on the local economy has been assessed to result in a temporary moderate beneficial effect. The majority of the employment opportunities generated from the Scheme construction phase are likely to be taken up by the local workforce. During these periods, the Scheme is expected to lead to a positive health impact from access to work and training. There is a potential for beneficial effect interactions from the above effects identified on the local workforce. A beneficial effect on the local economy in-combination with an opportunity to improve local access to work and training would provide additional benefits for the local community.	Socio-economics (moderate beneficial) Human Health (minor beneficial)	**No significant effect interactions:** The difference between the temporary improvement to the local economy and the overall change in-combination with the minor benefits to human health is expected to be a detectable but non-material change to the effects assessed individually. This effect interaction is therefore not expected to increase the significance of effects anticipated at this receptor in **Chapters 6-16** of this Environmental Statement **[EN010106/APP/6.1].**	None required

Table 17-4 Potential effect interactions during operation

Receptor	Description of potential effect interactions	Residual significance of effect determined through EIA	Effect interactions	Additional mitigation required (if any)
Users of PRoWs in vicinity of Sunnica East Site A (new permissive route on Beck Road)	During the operational phase, the Scheme will provide permissive routes which will improve safety and reduce journey times for some users. This will have a positive health and socio-economic impact on the local community.	Socio-economics (minor beneficial) Human Health (minor beneficial)	**No significant effect interactions:** The overall change in-combination from improvements to the PRoW network on socio-economics and human health is expected to be a detectable but non-material change This effect interaction is therefore not expected to increase the significance of effects anticipated at this receptor presented in **Chapters 6 to 16** of this Environmental Statement **[EN010106/APP/6.1].**	None required
Users of PRoWs in vicinity of Sunnica East Site B (new permissive route to the south of Freckenham Road, intersecting the existing diagonal unclassified bridleway (U6006))	As above	Socio-economics (minor beneficial) Human Health (minor beneficial)	As above	As above

Receptor	Description of potential effect interactions	Residual significance of effect determined through EIA	Effect interactions	Additional mitigation required (if any)
Users of PRoWs in vicinity of Sunnica East Site B (new permissive route to the south of the Site on Elms Road, intersecting the existing diagonal unclassified bridleway (U6006))	As above	Socio-economics (minor beneficial) Human Health (minor beneficial)	As above	As above

Table 17-5 Potential effect interactions during decommissioning

Receptor	Description of potential effect interactions	Residual significance of effect determined through EIA	Effect interactions	Additional mitigation required (if any)
Recreational users of PROW 257/002/0 (visual receptor 9A)	Recreational users of the PRoW network will experience reduced visual amenity (partial change in the composition of the existing view) from the presence of decommissioning plant and machinery in the vicinity. Recreational users of the PRoW network affected by decommissioning activity and closures will experience disruption from temporary route closures, pedestrian delay and amenity (including noise). Closures of PRoW will be for no longer than three weeks. As a result of temporary decommissioning activity and PRoW closures during decommissioning, it is likely that these impacts may discourage walkers from using PRoW, which may have a temporary negative impact on human health. The effects on people discussed above have the potential to lead to effect interactions. The temporary effects from the disruption to PRoW on human health, amenity and access alongside reduced visual amenity could result in an increase in 'annoyance' and stress amongst recreational users. This will be temporary.	Visual (moderate adverse) Transport and Access (minor adverse) Human Health - Social Cohesion and Lifetime Neighbourhoods (minor adverse) Human Health – Air Quality, Noise and Neighbourhoods (neutral)	**No significant effect interactions:** The difference between the visual effects on PRoW users and the overall change in-combination with the minor effects anticipated from disruption to the PRoW network and human health is expected to be a detectable but non-material change. This effect interaction is therefore not expected to increase the significance of effects anticipated at this receptor in **Chapters 6** to **16** of this Environmental Statement **[EN010106/APP/6.1].**	No additional mitigation outside of that proposed within the Framework Decommissioning Environmental Management Plan (DEMP) in **Appendix 16E** of this Environmental Statement **[EN010106/APP/6.2]** is proposed. The temporary closures of PRoW will be supported by appropriate and clearly signed alternative routes and where possible will be planned and programmed to minimise disruption to users. The effect interaction will be temporary, and mitigation has already been included as part of the design as embedded mitigation.

Receptor	Description of potential effect interactions	Residual significance of effect determined through EIA	Effect interactions	Additional mitigation required (if any)
Users of public right of way W257/007/0	Recreational users of the PRoW network affected by closures will experience disruption through severance, pedestrian delay and amenity due to temporary closures of some PRoW during decommissioning. Closures of PRoW will be for no longer than three weeks. As a result of temporary PRoW closures during decommissioning, it is likely that these impacts may discourage walkers from using PRoW, which may have a temporary negative impact on human health. The effects on people discussed above have the potential to lead to effect interactions. The temporary effects from the disruption to PRoW on human health, amenity and access could result in an increase in 'annoyance' and stress amongst recreational users. This will be temporary.	Visual (minor adverse) Socio-economics (moderate adverse) Human Health (minor adverse)	**No significant effect interactions:** The difference between the visual effects on PRoW users and the overall change in-combination with the minor effects anticipated from disruption to the PRoW network and human health is expected to be a detectable but non-material change. This effect interaction is therefore not expected to increase the significance of effects anticipated at this receptor in **Chapters 6-16** of this Environmental Statement **[EN010106/APP/6.1].**	No additional mitigation outside of that proposed within the Framework Decommissioning Environmental Management Plan (DEMP) in **Appendix 16E** of this Environmental Statement **[EN010106/APP/6.2]** is proposed. The temporary closures of PRoW will be supported by appropriate and clearly signed alternative routes and where possible will be planned and programmed to minimise disruption to users. The effect interaction will be temporary, and mitigation has already been included as part of the design as embedded mitigation.
Users of public right of way W257/002/X	As above	Visual (minor adverse) Socio-economics (moderate adverse) Human Health (minor adverse)	As above	As above

Receptor	Description of potential effect interactions	Residual significance of effect determined through EIA	Effect interactions	Additional mitigation required (if any)
Users of public right of way U6006	As above	Visual (minor adverse) Socio-economics (minor adverse) Human Health (minor adverse)	As above	As above
Users of public right of way W-257/003/0	As above	Visual (minor adverse) Socio-economics (minor adverse) Human Health (minor adverse)	As above	As above
Users of PRoWs in vicinity of Sunnica East Site B (new permissive route to the south of Freckenham Road, intersecting the existing diagonal unclassified bridleway (U6006))	The decommissioning phase would see the potential removal of the permissive paths that would have been in use for the operational life of the Scheme. The effects on people have the potential to lead to effect interactions. The permanent effects from the closing of permissive routes on human health, amenity and access could result in an increase in 'annoyance' and stress amongst recreational users, who may have become accustomed to utilising the permissive routes during operation. This will be permanent.	Socio-economics (minor adverse) Human Health (minor adverse)	**No significant effect interactions:** The overall change in-combination from the removal of permissive routes on recreational users is expected to be a detectable but non-material change. This effect interaction is therefore not expected to increase the significance of effects anticipated at this receptor in **Chapters 6** to **16** of this Environmental Statement **[EN010106/APP/6.1].**	No additional mitigation outside of that proposed within the Framework Decommissioning Environmental Management Plan (DEMP) in **Appendix 16E** of this Environmental Statement **[EN010106/APP/6.2]** is proposed.

Receptor	Description of potential effect interactions	Residual significance of effect determined through EIA	Effect interactions	Additional mitigation required (if any)
Users of PRoWs in vicinity of Sunnica East Site B (new permissive route to the south of the Site on Elms Road, intersecting the existing diagonal unclassified bridleway (U6006))	As above	Socio-economics (minor adverse) Human Health (minor adverse)	As above	As above
Local economy – Employment generation	The impact of decommissioning employment generation on the local economy has been assessed to result in a temporary moderate beneficial effect. The majority of the employment opportunities generated from the Scheme decommissioning phase are likely to be taken up by the local workforce. During these periods, the Scheme is expected to lead to a positive health impact from access to work and training. There is a potential for beneficial effect interactions from the above effects identified on the local workforce. A beneficial effect on the local economy in-combination with an opportunity to improve local access to work and training would provide additional benefits for the local community.	Socio-economics (moderate beneficial) Human Health (minor beneficial)	**No significant effect interactions:** The difference between the temporary improvement to the local economy and the overall change in-combination with the minor benefits to human health is expected to be a detectable but non-material change. This effect interaction is therefore not expected to increase the significance of effects anticipated at this receptor in **Chapters 6** to **16** of this Environmental Statement **[EN010106/APP/6.1].**	None required

Cumulative Effects

17.5.4 **Table 17-6** below summarises the outcomes of the cumulative assessments for the construction and operation phases of the Scheme. Cumulative effects for decommissioning have not been assessed, as the cumulative developments within the study area will have become part of the future baseline or been decommissioned in advance of this phase of Scheme. Cumulative assessments are detailed in each of the technical **Chapters 6** to **16** of this Environmental Statement **[EN010106/APP/6.1]**.

Table 17-6: Summary of the cumulative effects identified within each of the technical Chapters 6 to 16 of this Environmental Statement [EN010106/APP/6.1]

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
Climate Change			
Consideration of cumulative effects have been scoped out of the Climate Change assessment. Refer to **Chapter 6: Climate Change** of this Environmental Statement **[EN010106/APP/6.1]** for further details.			
Cultural Heritage			
Impacts on the significance of designated heritage assets and setting as a result of security lighting, operational noise and associated traffic as well as a result from glint and glare on the solar panels.	The potential for a cumulative effect on the setting of the scheduled Snailwell Roman Villa (NHLE 1006868) has been identified as a result of an approved proposal (East Cambridge District Council planning reference 17/01838/ESF) for a laboratory/office development on land south of Biggin Farm. The Roman Villa is located immediately west of the proposed location of Sunnica West Site B, on the opposing side of the River Snail, although outside the Order limits. The asset is well screened to the east by an extant belt of woodland at its eastern edge. There may, however, be fleeting views from the northern boundary of the asset onto Sunnica West Site B to the north east.	ID 85 - 17/01838/ESF	**No significant cumulative effects:** It is not considered that the cumulative effect of both developments would increase the significance of effect above that already assessed during operation of the Scheme.

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
	The proposed buildings of the laboratory/office development would sit to the north of the villa with Sunnica West Site B sited to the east and north-east. The villa is located on a slight topographic rise, and as such the proposed industrial buildings have been assessed as having a moderate adverse effect on the scheduled monument, which is of high value, due to the urbanising effect on its setting. Sunnica West Site B site would erode more of the agricultural setting of the asset; however, it would be screened from the asset by existing and enhanced vegetation. It is not considered that the cumulative effect of both developments would increase the significance of effect above that already assessed.		
Ecology			
Loss of priority and notable habitats during construction and decommissioning. Loss of habitats supporting protected and rare bird and terrestrial invertebrate species during construction and decommissioning. Disturbance and displacement of protected bird species during construction, operation and decommissioning.	Construction, operational, and decommissioning effects on ecology are predicted not to be significant. All cumulative developments where either EIA or an ecology assessment was required/presented do not report residual effects on ecology. There is therefore minimal opportunity for cumulative effects.	ID 95 - 17/02205/FUL ID 96 - 19/00155/FUL ID 98 - 15/00723/ESF ID 296 - 19/01576/SCREEN ID 325 - F/2013/0257/HYB ID 348 - 20/00557/ESF ID 487 - 21/00062/SCREEN ID 491 - 20/01081/SCOPE ID 562 - DC/21/0217/FUL ID 590 - 21/00706/ESF	**No significant cumulative effects:** No cumulative effects are anticipated during construction, operation or decommissioning. Mitigation will be provided for the Scheme, as well we at all cumulative scheme sites listed.

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
Water Environment			
Construction works increase the potential for mobilising sediments which can runoff into watercourses. Construction works also increase the surface area of bare ground which further increases this risk, especially after compaction of heavy plant machinery. Increased impermeable area provides a greater surface area for runoff of sediments and pollutants if not mitigated correctly. Dewatering activities have the potential to affect groundwaters and surface waters. Storage of chemicals, oils and other hazardous compounds could impact the water environment if not stored correctly.	For all these cumulative developments, it is assumed they would follow good industry practice in terms of the management of construction works and surface water runoff (and risk two groundwater of minor chemical leaks from static and mobile equipment) in the long term, compliant with all relevant environmental legislation, including that relating to flood risk and water resource management. It is considered that any temporary or permanent effects from these developments would not lead to cumulative impacts with the Scheme on the basis of both adopting standard good practice construction measures and appropriate SuDS or proprietary measures for longer term runoff. Therefore, it is not predicted that there would be any significant changes to the baseline conditions of the water resources in the area, nor any significant cumulative effects.	ID 80 - 19/00376/OUM ID 562 - DC/21/0217/FUL ID 271 - SCC/0063/19F ID 319 - DC/19/0444/EIASCR ID 180 - DC/17/0451/OUT ID 306 - DC/15/2529/EIASCR ID 86 - 18/00752/ESO ID 95 - 17/02205/FUL ID 96 - 19/00155/FUL ID 348 - 20/00557/ESF ID 590 - 21/00706/ESF ID 296 - 19/01576/SCREEN ID 375 - 20/00316/FUL ID 487 - 21/00062/SCREEN ID 696 - DC/21/1621/HYB ID 716- DC/21/1510/FUL ID 98 - 15/00723/ESF ID 85 - 17/01838/ESF ID 756 - 21/00816/FUL	**No significant cumulative effects:** It is predicted that there would not be any significant changes to the baseline conditions of the water resources in the area, nor any significant cumulative effects during construction, operation or decommissioning.

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
Leakage of oils from heavy plant machinery may also pose a risk to waterbodies.		ID 757 – N/A (National Grid Substation extension to the existing Burwell Substation) ID 695 - DC/21/1382/EIASCO	
Landscape and Visual			
Construction activity from Grid Connection Route B and the cumulative scheme located across a greater extent of published and local landscape character areas. Additional construction activity at Grid Connection Route B and the cumulative scheme visible for visual receptors.	The cumulative impact would be additional construction activity, excavation and presence of construction machinery in LLCA 20. In relation to the LLCA 20 the combination of Grid Connection Route B and the cumulative scheme would increase the magnitude of impact for LLCA 20, from low (as predicted for Grid Connection Route B) to medium. The effect would also increase from negligible adverse (predicted for Grid Connection Route B) to minor adverse, which is considered not significant. This increase is due to the cumulative scheme. The combined construction activity would be visible for motorists on Chippenham Road and employees at the Horseracing Forensic Laboratory. For the motorists, the cumulative impact would not alter the predicted significant adverse effects from Grid Connection Route B. For the employees, the proximity of the cumulative scheme would increase the predicted effects to moderate adverse; this is considered significant. This increase is due to the cumulative scheme and temporary construction.	ID 85 - 17/01838/ESF	**Significant cumulative effects:** Moderate adverse effects on views of employees at the Horseracing Forensic Laboratory during construction. This is a change from the minor adverse effect attributed to the Scheme alone. **Not significant cumulative effects:** Minor adverse effects on LLCA 20 during construction. This is a change from the negligible effect attributed to the Scheme alone.

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
Construction activity for Burwell National Grid Substation Extension, Grid Connection Route B and the cumulative scheme in Burwell, located across a greater extent of published and local landscape character areas. Additional construction activity for Burwell National Grid Substation Extension, Grid Connection Route B and the cumulative scheme in Burwell visible for visual receptors. Additional infrastructure present during operation from the Burwell National Grid Substation Extension and the cumulative scheme.	All three relevant cumulative schemes listed in the next cell are located approximately 50m from the existing Burwell substation. The construction cumulative impact would be from the additional construction activity and machinery, located across both sides of Weir's Drove Road. However, as the construction activity would be consolidated between existing substations, also on both sides of Weir's Drove Road, the impacts would be localised. In relation to the published landscape character areas, the impacts and effects are considered to remain as predicted for the Scheme, due to the overall very small scale of the cumulative schemes. At the local level, the additional construction activity would increase the magnitude of impact for LLCA 38: Burwell, from very low (as predicted for the Scheme) to low. The effect would also increase, from negligible adverse (as predicted for the Scheme) to minor adverse. This is not significant. The combined construction activity would be visible at close range for motorists on Weir's Drove Road (VP53). Views of the combined construction activity would increase the impact from low (as predicted for the Scheme) to medium, due to construction activity on both sides of the road. The effect would also increase from minor adverse (as predicted for the Scheme), to moderate adverse; this is considered significant and temporary.	ID 95 - 17/02205/FUL ID 96 - 19/00155/FUL ID 756 - 21/00816/FUL	**Significant cumulative effects:** Moderate adverse effect for motorists on Weir's Drove Road (VP53) during construction. This is a change from the minor adverse effect attributed to the Scheme alone. **Not significant cumulative effects:** Minor adverse effects on LLCA38: Burwell during construction and operation. This is a change from the negligible effect attributed to the Scheme alone. Minor adverse effects for motorists on Weir's Drove Road (VP53) during operation. This is a change from the negligible effect attributed to the Scheme.

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
	In operation, the cumulative impact would be additional infrastructure adjacent to a part of Weir's Drove Road. For LLCA38: Burwell, compared to the neutral effect predicted for the Scheme, the cumulative effect would increase to minor adverse; this is considered not significant. This increase is due to the cumulative scheme as it increases the amount of infrastructure within the LLCA. Also, in operation, there would be close range views for motorists on Weir's Drove Road (VP53) of the proposed infrastructure on both sides of road. Compared to the predicted negligible adverse effect for the Scheme, the cumulative effect would be minor adverse. This is considered not significant.		
Alterations to surface landform and the presence of construction activity for Grid Connection Route B, Burwell National Grid Substation Extension and the cumulative scheme.	For Lowland Village Chalklands, Settled Fenlands and Cambridge Area 2: Chalklands the cumulative construction effect would increase from minor adverse (for the Scheme) to moderate adverse. At the local scale, there would be cumulative impacts to LLCA 36: Burwell Fen. The impact of the construction activity would increase the alterations to surface landform and the overall presence of construction activity across Burwell Fen, from Grid Connection Route B, Burwell National Grid Substation Extension and the cumulative scheme. In operation, with Grid Connection Route B below ground, the cumulative impacts would relate to the proposed substation and the cumulative scheme. Both would introduce additional infrastructure, within the context and perception of existing substations and overhead pylons.	ID 98 - 15/00723/ESF	**Significant cumulative effects:** Moderate adverse for Lowland Village Chalklands, Settled Fenlands and Cambridge Area 2: Chalklands during construction. This is a change from the minor adverse effect attributed to the Scheme alone. Moderate adverse for Lowland Village Chalklands during operation. This is a change from the minor effect attributed to the Scheme.

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
			No significant cumulative effects: Minor adverse for LLCA 36: Burwell Fen during construction. This is a change from the negligible effect attributed to the Scheme. Minor adverse for Settled Fenlands and Cambridge Area 2: Chalklands during operation. This is a change from the negligible effect attributed to the Scheme alone. Minor adverse for LLCA36 during operation. This is a change from the negligible effect attributed to the Scheme alone.
Construction activity for Grid Connection Route B and the cumulative scheme located across a greater extent of published and local landscape character areas. Additional construction activity for Grid Connection Route B and the cumulative scheme visible for visual receptors.	During the construction phase there would be cumulative impacts from the additional construction activity. As the extent of the construction activity is located across or in proximity to an existing settlement, there would be no change to the predicted effects to the published landscape character areas. In operation, with Grid Connection Route B below ground, the impacts and effects to LLCA 19 would relate to the cumulative scheme only. Visually, the cumulative schemes would not be within the same composition of views for any of the identified visual receptors. Therefore, there would be not be cumulative visual effects in construction, nor operation phases.	Policy FRD1, FRD2, FRD3 and FRD 4 – Allocations for Employment and Housing Policy FRD 5 and FRD 6 – Allocations for Employment and Housing	**Significant cumulative effects:** Moderate adverse for LLCA19 during construction. This is a change from the minor adverse effect attributed to the Scheme alone.

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
Alterations to surface landform and the presence of construction activity for Grid Connection Route B and the cumulative scheme. Additional infrastructure present during operation from Burwell National Grid Substation Extension and the cumulative scheme.	During the construction phase, there would be combined impacts from alteration to surface landform and the presence of construction activity, both adjacent to the existing substation compound and across the fields to the north and west. In operation, the impacts would relate to the proposed substation and the cumulative scheme, as Grid Connection Route B would be below ground. The cumulative scheme and the Scheme would introduce additional infrastructure, although the cumulative scheme would introduce a greater change in land use and perception of infrastructure, as the scheme is located adjacent to Burwell National Grid Substation Extension. Both the cumulative scheme and the Scheme would be located in a part of the published landscape character areas which are already characterised by large scale infrastructure. There would be no change to the predicted effects to the national character areas.	ID 348 - 20/00557/ESF	**Significant cumulative effects:** Moderate adverse for Lowland Village Chalklands, Settled Fenlands and Cambridge Area 2: Chalklands during construction. This is a change from the minor adverse effect attributed to the Scheme alone. Moderate adverse for users of Burwell Lode and Hightown Drove during construction. This is a change from the minor adverse effect attributed to the Scheme alone. Moderate adverse for Lowland Village Chalklands during operation This is a change from the minor adverse effect attributed to the Scheme alone. **No significant cumulative effects:** Minor adverse for Settled Fenlands and Cambridge Area 2: Chalklands during operation. This is a change from the negligible effect attributed to the Scheme alone.

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
			Moderate adverse for users of Burwell Lode and Hightown Drove during operation. This is a change from the negligible effect attributed to the Scheme alone.
Construction activity located across a greater extent of published and local landscape character areas. Additional construction activity visible for visual receptors. Alterations to surface landform and the presence of construction activity. Additional infrastructure present during operation	During the construction phase, there would be combined impacts from alteration to surface landform and the presence of construction activity. In operation, the cumulative impact would not alter the predicted effects to the national character areas.	ID 351 - 20/00522/FUM	**Significant cumulative effects:** Moderate adverse for Lowland Village Chalklands, Settled Fenlands and Cambridge Area 2: Chalklands during construction. This is a change from the minor adverse effect attributed to the Scheme alone. Moderate adverse for Lowland Village Chalklands during operation. This is a change from the minor adverse effect attributed to the Scheme alone. **No significant cumulative effects:** Minor adverse for LLCA33: Soham Mere during construction and operation. This is a change from the neutral effect attributed to the Scheme alone.

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
			Minor adverse for Settled Fenlands and Cambridge Area 2: Chalklands during operation. This is a change from the negligible effect attributed to the Scheme alone.
Additional infrastructure present during operation from Burwell National Grid Substation Extension and the cumulative scheme. Alterations to surface landform and the presence of construction activity for Burwell National Grid Substation Extension, Grid Connection Route B and the cumulative scheme.	During the construction phase, there would be combined impacts from alteration to surface landform and the presence of construction activity, both adjacent to the existing substation compound and across the fields to the east adjacent to Option 1 for the substation. The combined impact of the construction activity would not alter the predicted effects to the national character areas, due to their relatively small scale. The cumulative scheme and the Scheme would introduce additional infrastructure, although the cumulative scheme would introduce a greater change in land use and perception of infrastructure, with the Scheme adding another smaller extension to the infrastructure.	ID 757 – National Grid Substation extension to the existing Burwell Substation (no planning application)	**Significant cumulative effects:** Moderate adverse for Lowland Village Chalklands, Settled Fenlands and Cambridge Area 2: Chalklands during construction. This is a change from the minor adverse effect attributed to the Scheme alone. **No significant cumulative effects:** Minor adverse for Settled Fenlands and Cambridge Area 2: Chalklands during operation. This is a change from the negligible effect attributed to the Scheme alone.

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
Noise and Vibration			
Any overlapping of construction phases between the Scheme and the other nearby developments has the potential to contribute to cumulative effects. Interaction of operational noise from the Scheme and other nearby development schemes.	Due to their scale and location, these schemes may result in some interactive construction noise if they constructed at the same time as the Scheme. There is a potential for operational noise from the Scheme and the cumulative schemes to interact, causing cumulative effects on nearby receptors.	ID 271 - SCC/0063/19 ID 375 - 20/00316/FUL ID 562 - DC/21/0217/FUL ID 85 - 17/01838/ESF	**No significant cumulative effects:** it is not considered that the Scheme and the cumulative schemes would give rise to any significant adverse noise effects during construction or operation. This is because of the relatively small scale and nature of the cumulative schemes.
Any overlapping of construction phases between the Scheme and the other nearby developments has the potential to contribute to cumulative effects. Interaction of operational noise from the Scheme and other nearby development schemes.	These schemes comprise the construction and operation of battery storage facilities and a solar farm adjacent to the Burwell National Grid Substation Expansion and the village of Burwell. As such there is the potential for interactive noise effects with these developments and the Scheme on common noise-sensitive receptors in Burwell (represented by receptor R1). Significant cumulative effects are only anticipated if the construction phases overlap with the construction of the Scheme.	ID 95 - 17/02205/FUL ID 96 - 19/00155/FUL ID 348 - 20/00557/ESF	**Significant cumulative effects:** Moderate adverse for the nearest receptors at Burwell (noise receptor R1) during construction. This is a change from the negligible effect attributed to the Scheme alone. **No significant cumulative effects:** Minor adverse for the nearest receptors at Burwell (noise receptor R1) during operation. This is no change from the conclusions of the effects of the Scheme alone.

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
	The construction noise assessments submitted for each of these developments conclude that there will be no significant adverse noise effects from construction works noise on local receptors. However, any overlapping of construction phases between the Scheme and these developments has the potential to contribute to in-combination cumulative effects, which could increase the overall level of construction noise as well as the overall duration of construction noise effects. While the residual construction noise effects of the Scheme in isolation are negligible to minor adverse and not significant, should all four developments be constructed at the same time cumulative effects from construction noise affecting the nearest receptors at Burwell may be up to moderate adverse but temporary with no permanent effect. The operational noise assessments submitted for the battery storage facilities (scheme ID 95 and 96) each conclude that predicted noise levels from operational plant will be below the lowest observed adverse effect level (LOAEL) and not result in significant adverse noise effects. The assessment submitted for the solar farm (scheme ID 348) did not include a comparison to LOAEL or significant observed adverse effect level (SOAEL) however concluded that noise levels from operational plant will be negligible and not significant and will not exceed background levels, which is equivalent to below LOAEL in this assessment.		

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
	While the residual operational noise effects of the Scheme in isolation on receptors within Burwell are above LOAEL (but below SOAEL) and up to minor adverse and not significant (as shown in Table 11-20 in **Chapter 11: Noise and Vibration** of this Environmental Statement **[EN010106/APP/6.1]**), the operation of all four developments at the same time could increase the overall level of industrial-type noise experienced by receptors in Burwell. However, as operational noise from the cumulative developments are below LOAEL, it is not expected that this would lead to excesses of the SOAEL or result in any significant adverse operational noise effects on local noise receptors. As such, cumulative effects from operational noise affecting the nearest receptors at Burwell are considered to be limited to minor adverse.		
Socioeconomics and Land Use			
Increase in construction-related employment demand	All the approved cumulative schemes and submitted applications short listed will generate additional construction-related employment demand either in the study area or in the surrounding areas to the study area if they were to go ahead. The scale of the construction employment demand generated cannot be readily quantified based on the information available for each scheme as this information is commercially sensitive and not available. The Scheme is providing a benefit to the local employment in isolation, and employment potentially provided by the other developments would only increase this benefit.	All planning applications shortlisted in **Appendix 5A** of this Environmental Statement **[EN010106/APP/6.2]**	Not possible to determine, although the cumulative effects would be beneficial to local employment.

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
Increase of employment opportunities through the construction of cumulative developments. Improvement to local economy Increase of employment opportunities during operation	The combined effect of the construction of the cumulative developments is likely to bring considerable additional employment to the local economy. Although this is expected to result in an increase in construction employment, the overall cumulative effect from the generation of construction workers is likely to remain as temporary medium beneficial effect on the economy of the study area, resulting in a temporary moderate beneficial effect which is considered significant. In relation to development land, if all the schemes are to be realised there will be considerable additional employment demand from some of the cumulative schemes offering new offices, retail and commercial space. Most cumulative schemes, however, will not generate considerable operational employment due to their nature as infrastructure or utilities projects or as purely residential-led development projects.	All planning applications shortlisted in **Appendix 5A** of this Environmental Statement **[EN010106/APP/6.2]**	**Significant cumulative effects:** Moderate beneficial on the local economy during construction. This is no change from the conclusions of the effects of the Scheme alone. **No significant cumulative effects:** Negligible for employment generation during operation. This is no change from the conclusions of the effects of the Scheme alone.
Increase in generation of Gross Value Added (GVA) from construction employment.	The overall cumulative effect from the generation of GVA from construction is likely to remain temporary medium beneficial on the local economy, resulting in a temporary minor beneficial effect, which is not considered significant.	All planning applications shortlisted in **Appendix 5A** of this Environmental Statement **[EN010106/APP/6.2]**	**No significant cumulative effects:** Minor beneficial on the local economy. This is no change from the conclusions of the effects of the Scheme alone.

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
Temporary disruptions of PRoW during the construction phase of the Scheme. Effects on PRoW during operation.	The overall cumulative effect on PRoWs is likely to remain temporary medium adverse as there are limited cumulative schemes adjacent to the Scheme or in close proximity, only the pre-application stage Potable Water Pipeline. Though the route of the pipeline is known, it is at an early planning stage so its impact on PRoWs is likely to result in no greater effects. The next closest cumulative schemes are 50m south from the Burwell National Grid Substation Extension which will not impact any PRoW, let alone those located within the Scheme. The overall cumulative effects on PRoWs during the operational phase will remain as minor beneficial as there are no cumulative schemes adjacent to or in close proximity to the Scheme, resulting in a permanent minor beneficial effect, which is not considered significant.	All planning applications shortlisted in **Appendix 5A** of this Environmental Statement **[EN010106/APP/6.2]**	**Significant cumulative effects:** Moderate adverse for those PRoWs concluded to be significantly affected through construction of the Scheme alone. This is no change from the conclusions of the effects of the Scheme alone. **No significant cumulative effects:** Minor adverse and negligible for those PRoWs concluded to be not significantly affected through construction of the Scheme alone. This is no change from the conclusions of the effects of the Scheme alone. Minor beneficial for users of PRoW during operation. This is no change from the conclusions of the effects of the Scheme alone.
Potential for noise, air quality, visual and traffic effects arising from construction and operation of the Scheme to impact on the amenity of residents, businesses and users of community facilities.	The overall cumulative effect on residential properties, business premises and community facilities is likely to remain as a negligible effect, which is not significant as there are no cumulative schemes adjacent to the Scheme or in close proximity.	All planning applications shortlisted in **Appendix 5A** of this Environmental Statement **[EN010106/APP/6.2]**	**No significant cumulative effects:** Negligible effect on residential properties, business premises and community facilities during construction and operation.

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
	The overall cumulative effect on residential properties, business premises and community facilities is likely to remain as a negligible effect, which is not significant as there are no cumulative schemes adjacent to the Scheme or in close proximity.		
Loss of good quality agricultural land and soil resource during construction and operation	Unlike built development, consent for a solar power site is temporary with little or no loss of agricultural land or the soil resource. There is therefore no cumulative construction effect for soil and agricultural land resource. During operation, the use of agricultural land in the other cumulative schemes listed in **Appendix 5A** of this Environmental Statement **[EN010106/APP/6.2]** by specialist agricultural contractors for rotations of potato, carrot and onion crops is not known. Development of arable land will reduce the extent of land available for such high margin crops. However, the dominant limiting factor on the area of such cropping is not suitable land but the volume of irrigation water available. Therefore, the freeing up of abstraction licence volume from any other realised schemes will act to negate the reduction in currently used land area. Rotations of irrigated crops can be increased on the remaining agricultural land at the expense of rain fed arable crops such as wheat. All such decisions will of course be subject to market prices for cereals, potato and vegetables. Cumulative operational effect on farm businesses is therefore a temporary negligible effect which is not considered significant.	All planning applications shortlisted in **Appendix 5A** of this Environmental Statement **[EN010106/APP/6.2]**	**No significant effects:** No cumulative effect on soil during construction. Negligible effects on farm businesses and arable farming during construction. This is no change from the conclusions of the effects of the Scheme alone.
Transport and Access			

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
Increased traffic flows, including staff vehicles and HGVs on the roads leading to the Site. Severance and intimidation associated with increased construction traffic and abnormal loads.	The assessment of cumulative developments is inherent in the transport and access assessment undertaken within **Chapter 13: Transport and Access** of this Environmental Statement **[EN010106/APP/6.1]**. The future baselines to 2023 has been calculated using TEMPro growth factors which include forecast development growth.	All planning applications shortlisted in **Appendix 5A** of this Environmental Statement **[EN010106/APP/6.2]**	Cumulative effects will be as reported in the Residual Effects Section of **Chapter 13: Transport and Access** of this Environmental Statement **[EN010106/APP/6.1]**. No significant effects were identified.
Air Quality			
Increased particulate material generated by onsite activities during the construction phase.	Any development occurring at the same time as the Scheme will be required to undertake its own dust risk assessment and implement mitigation to ensure that there are no off-site impacts. There are no residual effects on air quality greater than negligible significance, and therefore no potential for cumulative effects to occur when considering the Scheme along with other nearby projects. Any significant effects would be due to these other projects on their own, and not together.	All planning applications shortlisted in **Appendix 5A** of this Environmental Statement **[EN010106/APP/6.2]**	**No significant cumulative effects:** No cumulative effects on air quality receptors.
Human Health			
Access to Healthcare Services and other Social Infrastructure impacts Accessibility and Active Travel impacts	The assessment undertaken in **Chapter 15: Human Health** of this Environmental Statement **[EN010106/APP/6.1]** is inherently cumulative as the traffic data which the assessment is based on includes the change in traffic generated by other committed developments.	All planning applications shortlisted in **Appendix 5A** of this Environmental Statement **[EN010106/APP/6.2]**	**No significant cumulative effects:** No cumulative effects on access to people in relation to access to healthcare services, social infrastructure impacts and

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
	Changes in traffic flows have already been assessed as part of **Chapter 13: Transport and Access** and in the assessment presented within **Chapter 15: Human Health** and are therefore inherent as part of the assessment presented in the chapter. It is therefore concluded that the potential cumulative effects on non-motorised users will be the same as is the case for the Scheme when assessed in isolation.		accessibility and active travel impacts.
Access to work and training during construction	The construction phases of the Scheme and the other committed developments would both be expected to generate employment. In the absence of commercially sensitive information relating to the construction costs of each of the cumulative developments, it is not possible to make a quantitative assessment of the employment likely to be generated from the construction stage of the other developments. It is expected that there would be a beneficial effect on construction related employment within the local area, which would have a beneficial effect on human health and wellbeing. Similarly, once the committed developments are built there will be new commercial, retail and leisure space created that will provide further opportunities for residents to access work and training in the local area. The new employment space would provide job opportunities for existing and new residents to the area, resulting in a beneficial effect for the local community.	All planning applications shortlisted in **Appendix 5A** of this Environmental Statement **[EN010106/APP/6.2]**	**Potential significant cumulative effects:** It is expected that there would be a cumulative beneficial effect on construction related employment within the local area. The magnitude of this effect is difficult to quantify in the absence of information relating to construction costs of the cumulative developments. It is expected that there would be a cumulative beneficial effect on operation related employment within the local area

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
Air Quality, Noise and Neighbourhood Amenity impacts	It is considered that any overlap of construction phases between the Scheme and these other nearby development developments has the potential to contribute to cumulative effects. The noise assessment indicates that were the planned developments to be constructed at the same time, then cumulative effects from construction noise affecting the nearest receptors at Burwell may be up to moderate adverse (significant), but temporary with no permanent effect. It is considered unlikely in reality that the construction of all these developments will overlap together, however to minimise the potential for cumulative effects the Scheme will have a designated environmental manager during construction who will liaise with these other developments to identify measures that can be undertaken to minimise disruptions and noise effects. Therefore the potential health effect as a result of this cumulative noise effect is during the construction and the operation phases could be greater than when considering these developments in isolation.	All planning applications shortlisted in **Appendix 5A** of this Environmental Statement **[EN010106/APP/6.2]** and within 500m of the Order limits at Burwell Substation Extension.	**No significant cumulative effects:** Cumulative effects are not expected to be greater than when considering these developments in isolation.
Other Environmental Topics *Given the high-level nature of these assessments, the cumulative effects for each topic have not been quantified, rather they have been concluded to either be significant or not significant.* **Glint and Glare**			
Increased risk of glint and glare	Sixteen proposed solar farms have been identified in the short list of cumulative schemes within 10km of the Scheme. The assessment summarised above identified that with the introduction of the additional mitigation no receptors will experience significant effects as a result of	ID 97 - 18/00383/VARM ID 98 - 15/00723/ESF ID 133 - 13/01069/VAR	**No significant cumulative effects:** No effects on glint and glare receptors

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
	the Scheme. Additionally, it is anticipated that the cumulative developments will be designed to ensure that there will be effective screening to prevent glint and glare effects from the individual proposed developments. Therefore, cumulative effects would be unlikely and are not considered to arise for glint and glare. Therefore, the overall impact of the Scheme is considered not significant.	ID 146 ID 254 - 19/02997/CCSC ID 296 - 19/01576/SCREEN ID 348 - 20/00557/ESF ID 351 - 20/00522/FUM ID 405 - DC/21/0062/EIASCR ID 484 - 20/00761/CCA ID 485 - 20/01016/CCA ID 487 - 21/00062/SCREEN ID 557 - CCC/20/054/FUL ID 558 - CCC/20/051/FUL ID 590 - 21/00706/ESF	
Ground Conditions			
Potential for contamination	Provided that the requirements of relevant policy and legislation relating to land contamination and remediation are integrated within the design and appropriate mitigation measures are applied during the demolition and construction phases of each cumulative scheme, it is considered that the cumulative effect on ground conditions will be negligible.	All developments within 500m of the Order limits	**No significant cumulative effects:** Negligible on ground condition receptors
Major Accidents and Disasters			

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
Increased traffic during construction and decommissioning phases of the Scheme in combination with other developments could result in a greater risk of road accidents. Other solar developments could increase the risk of birdstrike and fire.	The shortlisted cumulative schemes located in close proximity to the Order limits are residential developments, solar farms and battery storage around Burwell Substation. Increased traffic during construction and decommissioning phases of the Scheme in combination with other developments could result in a greater risk of road accidents. This is assessed in **Chapter 13: Transport and Access** of this Environmental Statement **[EN010106/APP/6.1].** The solar developments in close proximity to the Order limits are located around Burwell Substation and adjacent to the Grid Connection Route B. They are not positioned in close proximity to the developable area of the Order limits. Additionally, with embedded mitigation and additional mitigation listed above to reduce the risk of fire, no significant effects are expected from the Scheme alone. For these reasons, it is concluded that no significant cumulative effects would arise from the Scheme.	All planning applications shortlisted in **Appendix 5A** of this Environmental Statement **[EN010106/APP/6.2]**	**No significant cumulative effects:** No significant cumulative effects on the risk of major accidents and disasters.
Telecommunications, Television Reception and Utilities			

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
Effects on telecommunications signals, television reception and utilities.	The Scheme has been assessed to have no effect on telecommunication, television or utilities. It is expected that the other developments included within the cumulative schemes shortlist would also have no effect on telecommunications and television reception and would adhere to the same mitigation as set out above to reduce the risk of damaging utilities. All developments will need to be managed through a CEMP and would include mitigation measures to reduce the risk of damaging utilities during construction. Therefore, no cumulative effects are expected on telecommunications, television reception, or utilities.	All planning applications shortlisted in **Appendix 5A** of this Environmental Statement **[EN010106/APP/6.2]**	**No significant cumulative effects:** No cumulative effects on telecommunications, television reception and utilities.
Waste			
Pressure on the local recycling plants or landfill sites	If the construction or decommissioning phases of the Scheme happen at the same time as the construction phase of another significant scheme within the local area, there may be some cumulative effects associated with waste. There are a number of potential schemes that, depending on construction dates, may have cumulative effects with the Scheme. These include a number of new residential developments within the local area, solar schemes, and two new battery storage facilities. Cumulative volumes of waste may put pressure on the capacity of local recycling plants or landfill sites. This would be managed through a Construction Resource Management Plan (CRMP) and consultation with waste providers. Therefore effects from cumulative volumes are not expected to be significant.	All planning applications shortlisted in **Appendix 5A** of this Environmental Statement **[EN010106/APP/6.2]**	**No significant cumulative effects:** No significant cumulative effects on landfill facilities.

Potential Impact	Potential for Cumulative Effect	Relevant Cumulative Schemes (ID listed in Appendix 5A of the ES – Application Reference)	Cumulative Effect
	Additionally, cumulative effects may occur from increased HGVs transporting waste to recycling plants and landfill. This is assessed in **Chapter 13: Transport and Access** of this Environmental Statement **[EN010106/APP/6.1].**		

17.6 Conclusions

Effect Interactions

17.6.1 Potential effect interactions from the Scheme includes consideration of individual effects identified in **Chapters 6** to **16** combining on a single receptor. The assessment of effect interactions has concluded that there is no potential for significant effect interactions as a result of the Scheme. Where effect interactions are predicted to happen, it is acknowledged that it may slightly increase the impact on the receiving receptor or local community, but it is not expected to be to a degree where together it noticeably elevates the significance of the likely effects above what is already reported in **Chapters 6** to **16** of this Environmental Statement **[EN010106/APP/6.1]**

Cumulative Effects

17.6.2 The assessment of cumulative impacts has considered the potential for effects from other developments in the area to combine with and intensify effects caused by the Scheme.

17.6.3 There is a potential for some significant adverse cumulative effects on the landscape and visual amenity as a result of a number of developments being under construction and in operation at the same time as the Scheme.

17.6.4 A significant adverse cumulative effect from noise is predicted to some residential properties in Burwell (noise receptor R1 from the noise and vibration assessment). These schemes comprise the construction and operation of battery storage facilities and a solar farm adjacent to the Burwell National Grid Substation Extension and the village of Burwell. The construction noise assessments submitted for each of these developments conclude that there will be no significant adverse noise effects from construction works noise on local receptors. However, any overlapping of construction phases between the Scheme and these developments has the potential to contribute to in-combination cumulative effects, which could increase the overall level of construction noise as well as the overall duration of construction noise effects. While the residual construction noise effects of the Scheme in isolation are negligible to minor adverse and not significant, should all four developments be constructed at the same time cumulative effects from construction noise affecting the nearest receptors at Burwell may be up to moderate adverse, but temporary with no permanent effect.

17.6.5 The operational noise assessments submitted for the battery storage facilities (scheme ID 95 and 96) each conclude that predicted noise levels from operational plant will not result in significant adverse noise effects. The assessment submitted for the cumulative solar farm (scheme ID 348) concluded that noise levels from operational plant will be negligible and not significant and will not exceed background levels. The operation of all four developments at the same time could increase the overall level of industrial-type noise experienced by receptors in Burwell. However, it is not expected that this would result in any significant adverse operational noise effects on local noise receptors. As such, cumulative effects from operational noise

affecting the nearest receptors at Burwell are considered to be limited to minor adverse.

17.6.6 There is a potential for significant adverse cumulative effects on users of PRoWs during construction due to potential PRoW closures occurring at the same time within the local area, however the magnitude of effects wouldn't change from those assessed for the Scheme alone. This significant cumulative effect is limited to the construction phase only and is attributed to the possibility of the construction phases for the different cumulative schemes overlapping with the construction of the Scheme and needing PRoW closures at the same time or in close succession. It is not expected that these cumulative schemes would elevate any residual effects associated with the operational Scheme.

17.6.7 There is a potential for cumulative effects to result in additional benefits through additional employment to the local economy during construction. The benefits are expected to be greater than identified for the Scheme in isolation, however the significance is difficult to quantify without information on employment for the other developments.

17.7 References

Ref 17-1 Her Majesty's Stationary Office (HMSO) (2017) The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.

Ref 17-2 Directive 2011/92/EU of the European Parliament and of the Council (2011) on the assessment of the effects of certain public and private projects on the environment.

The Planning Inspectorate's Advice Note 17: Cumulative Effects Assessment, Version 2 (2019).