Galileo 03 Ltd.

Mynydd Ty-talwyn Energy Park – Environmental Statement Volume II

Main Written Statement– Chapter 15: Intra-Project Combined Effects

Project Reference: 663870

This chapter is summarised within the Non-Technical Summary of this Environmental Statement. A Welsh translation of the Non-Technical Summary is also available as part of the application.

Crynhoir y bennod hon yng Nghrynodeb Annhechnegol y Datganiad Amgylcheddol hwn. Mae cyfieithiad Cymraeg o'r Crynodeb Annhechnegol hefyd ar gael fel rhan o'r cais.

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15 INTRA-PROJECT COMBINED EFFECTS

15.1 Introduction

15.1.1 This chapter reports the likely intra-project combined environmental effects associated with the Proposed Development. Intra-project combined effects are the interaction and combination of different environmental residual (post-additional mitigation) effects from within the Proposed Development affecting a single receptor/resource.

15.1.2 It should be noted that inter-project cumulative effects (the combined residual (post-mitigation) effects of the Proposed Development and other developments on a single receptor/resource) are assessed in **ES Volume II, Chapters 5 to 14**.

15.2 Legislative Framework

15.2.1 This assessment has been undertaken in accordance with the requirements of EIA Regulations 2017. Schedule 4 paragraph (5)(e) of the EIA Regulations 2017 states that the ES 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 population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and the landscape.

15.2.2 Regulation 5(2)(e) of the EIA Regulations 2017 requires applicants to assess *"the interaction between those factors."*

15.3 Environmental Baseline

15.3.1 The existing and future baselines for each environmental factor are presented in **ES Volume II, Chapters 5 to 14**.

15.4 Approach to Assessment

15.4.1 The approach to the assessment of intra-project combined effects has considered the changes in baseline conditions at common receptors (i.e., those receptors that have been identified as experiencing likely significant effects by more than one environmental factor) due to the Proposed Development. The assessment has been undertaken over two broad stages:

Stage 1: Screening

15.4.2 Screening has been undertaken to determine whether a receptor is exposed to more than one type of residual (post-additional mitigation) effect during the construction, operational and/or decommissioning phases[1] of the Proposed Development. Those common receptors exposed to two or more types of residual effects with significance of 'slight/minor' or greater, have been taken forward to Stage 2 of the assessment.

15.4.3 If there is only one type of effect on a receptor (i.e. only one environmental factor assessment has identified effects on that receptor), then it has been considered that there are no potential intra-project combined effects, and the receptor has not been taken forward to Stage 2 of the assessment.

Stage 2: Assessment for Intra-Project Combined Effects

15.4.4 A quantitative assessment of the overall significance of the intra-project combined effects on common receptors identified at Stage 1 has been undertaken, where possible, based on technical information provided in the environmental factor assessments (**ES Volume II, Chapters 5 to 14**), supporting appendices, as well as professional judgement. The study area for the assessment of intra-project combined effects has been informed by the study areas and relevant guidance for the individual environmental factor assessments, described in **ES Volume II, Chapters 5 to 14**.

15.4.5 Given that the types of effects experienced by a receptor or receptor group may be very different in some cases, a quantitative assessment has not always been possible, and where that is the case, it has been necessary to apply professional judgement in determining the significance of each individual effect.

15.4.6 The evaluation at the receptor level has considered:

- previously identified sensitivity/importance/value;
- the magnitude of change at the common receptor; and
- duration and reversibility of interaction.

15.4.7 The focus of the evaluation has been on determining a change in the level of effect likely to be experienced by a receptor or receptor group and importantly whether this is significant or not.

15.4.8 Where **ES Volume II, Chapters 5 to 14** have concluded a significant effect on a receptor or receptor group taken forwards in Stage 2 of the assessment, on a precautionary basis, the intra-project combined effect has been categorised as significant. However, this is not classified as a new significant effect, in addition to or separate from that identified in the relevant environmental factor chapter.

[1] Due to the expected similarities of the likely effects of the Proposed Development during the construction phase and the decommissioning phase, these phases have been grouped in this assessment to avoid repetition. Where an effect is only relevant to one particular phase and not the other, this has been clearly stated.

15.5 Assessment of Intra-Project Combined Effects

15.5.1 The Stage 1 Screening Assessment is presented in **Table 15.1** and **Table 15.2.**

15.5.2 The following factors have not been included in the operational screening in **Table 15.2**, as no effects greater than negligible (or equivalent) have been identified:

- Water (**ES Volume II, Chapter 6**);
- Ornithology (**ES Volume II, Chapter 11**); and
- Traffic and Movement (**ES Volume II, Chapter 12**).

Table 15.1 Screening of the Interaction Between Common Receptors and Residual Effect: Construction and Decommissioning Phases

Receptor/ receptor group	Residual construction/decommissioning effect of 'slight/minor' or greater significance										
	Land, Soils and Groundwater	Water	Cultural Heritage	Landscape and Visual	Noise and Vibration	Terrestrial Ecology	Ornithology	Traffic and Movement	Population	Climate	Taken forward to Stage 2?
Land (potential contamination)	X										N
Land (mineral safeguarding)	X										N
Soil	X										N
Groundwater (quantity and quality)	X										N
Groundwater (abstraction points)	X										N
Water Framework Directive (WFD) water body of Kenfig - headwaters to tidal (Nant Craigyraber, Nant Iorweth-goch and Afon Cynffig) and on-site hydrologically connected watercourses		X									N
WFD water body of Llynfi - Lletty Brongu STW to conf with Ogmore (Nant y Gadlys, Nant Cedfyw and Afon Llynfi) and on-site hydrologically connected watercourses		X									N
WFD water body of Ogmore - confluence with Llynfi to tidal limit (downstream Afon Llynfi) and on-site hydrologically connected watercourses		X									N
Possible Bronze Age burial mounds in Solar Parcel K			X								N
Known and potential Bronze Age cremation burials in Solar Parcel H			X								N

Receptor/ receptor group	Residual construction/decommissioning effect of 'slight/minor' or greater significance										
	Land, Soils and Groundwater	Water	Cultural Heritage	Landscape and Visual	Noise and Vibration	Terrestrial Ecology	Ornithology	Traffic and Movement	Population	Climate	Taken forward to Stage 2?
Bronze Age to Romano-British enclosure E1 in Solar Parcel E			X								N
Roman pit in Solar Parcel J			X								N
The medieval road of Ffordd-y-Gyfraith and its former branches to the British Fortified Residence and Mynydd Baeden			X								N
Post-medieval enclosure E2 in Solar Parcel J			X								N
Post-medieval enclosure E6 in Solar Parcel G			X								N
Post-medieval pit within the footprint of Turbine T03			X								N
Post-medieval pit in Solar Parcel J			X								N
Four large undated pits, which may be associated with post-medieval quarrying, in Solar Parcel G (and others elsewhere across the Site)			X								N
Probable post-medieval ditches (mapped as 'intrenchments) in the vicinity of the access track to Turbine T01 (and others elsewhere across the Site)			X								N
Landscape features - hedgerows				X		X					Y
Bannau Brycheiniog National Park				X							N
Gower National Landscape				X							N

Receptor/ receptor group	Residual construction/decommissioning effect of 'slight/minor' or greater significance										
	Land, Soils and Groundwater	Water	Cultural Heritage	Landscape and Visual	Noise and Vibration	Terrestrial Ecology	Ornithology	Traffic and Movement	Population	Climate	Taken forward to Stage 2?
Historic landscapes				X							N
Local landscape designations (including Special Landscape Areas)				X							N
National landscape character areas				X							N
Local landscape character				X							N
Local landscape character areas (LANDMAP)				X							N
Margam Park Deer Park				X							N
Llangynwyd Conservation Area				X							N
Heol Gelli Lenor, Maesteg				X							N
Heol Dewi Sant, Bettws				X							N
Bridge over River Llynfi east of Coytrahen				X							N
Bridgend Circular Walk				X							N
Heol Shon, Cefn Cribwr				X							N
Kenfig Burrows				X							N
Pen y Foel Trig Point				X							N
Mumbles Hill, Swansea				X							N
Settlement of Llangynwd (Pont Rhyd-y-cyff) – western hamlet				X							N
Settlement of Llangynwd (Pont Rhyd-y-cyff) – eastern hamlet				X							N
Settlement of Maesteg				X							N

Receptor/ receptor group	Residual construction/decommissioning effect of 'slight/minor' or greater significance										
	Land, Soils and Groundwater	Water	Cultural Heritage	Landscape and Visual	Noise and Vibration	Terrestrial Ecology	Ornithology	Traffic and Movement	Population	Climate	Taken forward to Stage 2?
Settlement of Lletty Brongu				X							N
Settlement of Bettws				X							N
Settlement of Cefn Cribwr				X							N
Settlement of Kenfig Hill and Pyle				X							N
Settlement of Coedhirwaun				X							N
Settlement of Pen-y-fai				X							N
Settlement of North Cornelly / Cynffig				X							N
Users of Wales Coastal Path				X							N
Users of Cistercian Way				X							N
Users of on-Site / adjacent Public Rights of Way (PRoW) (including Ogwr Ridgeway Walk)				X				X	X		Y
Users of Cycle Routes				X							N
Users of the M4				X							N
Users of A48				X							N
Users of A4063				X				X			Y
Users of A4107				X							N
Users of A473				X							N
Users of A4061				X							N
Users of A4229				X							N
Users of B4281				X				X			Y
Users of B4265				X							N
Users of B4524				X							N
Users of South Wales Main Line Railway				X							N
Users of Maesteg Line Railway				X							N
Ty'nton					X						N

Receptor/ receptor group	Residual construction/decommissioning effect of 'slight/minor' or greater significance										
	Land, Soils and Groundwater	Water	Cultural Heritage	Landscape and Visual	Noise and Vibration	Terrestrial Ecology	Ornithology	Traffic and Movement	Population	Climate	Taken forward to Stage 2?
Gilfach Ganol Farm					X						N
Gilfach Uchaf Farm					X						N
The Windsor Barn					X						N
Maescadlawr Farm					X						N
Cwmrisca Farm					X						N
Ton Phillip Farm					X						N
Baiden Farm					X						N
Pentyla Farm					X						N
Ty Talwyn Farm					X						N
Brynfro Farm					X						N
Y Graig					X						N
Cwm Risca Meadow SSSI - National importance						X					N
NPT Watercourses SINC						X					N
Cwm Nant Gwyn SINC						X					N
Nant Cwm-bach SINC						X					N
Gilfach Uchaf SINC						X					N
NPT Ancient Semi-Natural Woodland SINC						X					N
Woodland						X					N
Fungi – County Level						X					N
Fungi – Local Level						X					N
Great Crested Newt						X					N
Bats (Roosting)						X					N
Bats (Foraging and Commuting)						X					N
Hazel Dormouse						X					N
Otter						X					N
Invasive Non-native Species						X					N
Eglwys Nunydd Reservoir SSSI							X				N

Receptor/ receptor group	Residual construction/decommissioning effect of 'slight/minor' or greater significance										
	Land, Soils and Groundwater	Water	Cultural Heritage	Landscape and Visual	Noise and Vibration	Terrestrial Ecology	Ornithology	Traffic and Movement	Population	Climate	Taken forward to Stage 2?
Aberbaiden Farm Meadows SINC							X				N
Lletty Brongu SINC							X				N
Tylacoch South SINC							X				N
Raptors							X				N
Waders and wildfowl							X				N
Teal							X				N
Nightjar							X				N
Breeding Bird Assemblage							X				N
Wintering Bird Assemblage							X				N
Users of New Road								X			N
Residents/ pedestrians in Aberkenfig								X			N
Residents/ pedestrians in Tondu								X			N
Residents/ pedestrians in Coytrahen								X			N
Residents / pedestrians in Llangynwyd along the A4063								X			N
Tourism									X		N
Business									X		N
Employment, Skills and Labour Market									X		N
Workforce spending and Gross Value Asses (GVA)									X		N
Atmosphere										X	N

Table 15.2 Screening of the Interaction Between Common Receptors and Residual Effects: Operational Phase

Receptor/receptor group	Residual operational effect of 'slight/minor' or greater significance							
	Land, Soils and Groundwater	Cultural Heritage	Landscape and Visual	Noise and Vibration	Terrestrial Ecology	Population	Climate	Taken forward to Stage 2
Land (potential contamination)	X							N
Soil	X							N
Groundwater (quality and quantity)	X							N
Groundwater (abstraction points)	X							N
British Fortified Residence GM086		X						N
Mynydd Ty Talwyn Ancient Farms GM092		X						N
Mynydd Ty Talwyn Ancient Farms GM093		X						N
Earthwork and Platform Houses N of Nant Fadog GM340		X						N
Church of St Cynwyd		X						N
Llangynwyd Conservation Area		X	X					Y
Landscape features including hedgerows and woodland			X					N
Bannau Brycheiniog National Park			X					N
Gower National Landscape			X					N
Historic landscapes			X					N
Local landscape designations (including Special Landscape Areas)			X					N
National landscape character areas			X					N
Local landscape character			X					N
Local landscape character areas (LANDMAP)			X					N
Margam Park Deer Park			X					N
Heol Gelli Lenor, Maesteg			X					N
Heol Dewi Sant, Bettws			X					N
Bridge over River Llynfi east of Coytrahen			X					N
Bridgend Circular Walk			X					N
Heol Shon, Cefn Cribwr			X					N
Kenfig Burrows			X					N

Receptor/receptor group	Residual operational effect of 'slight/minor' or greater significance							
	Land, Soils and Groundwater	Cultural Heritage	Landscape and Visual	Noise and Vibration	Terrestrial Ecology	Population	Climate	Taken forward to Stage 2
Pen y Foel Trig Point			X					N
Mumbles Hill, Swansea			X					N
Settlement of Llangynwd (Pont Rhyd-y-cyff)			X					N
Cwm Cae-Lloi Castell House Nant Y Castell			X					N
1-2, 3, 4 Gilfach Cottage			X					N
The Windsor Barn Gilfach Uchaf Farm Gilfach Ganol Farm			X	X				Y
Ty Trisant Pentre Lodge Pant Isaf Pentre Farm Pantysgawen Farm Hendre Forgan Farm Tyn Yr Heol Farm			X	X				Y
Baglan Villa Rose Cottage Brynawel Old Pen y Bryn Chapel			X					N
The Oaks			X					N
Ty Talwyn Farm The Old Stables			X	X				Y
Ffordd Y Gyfraith Farm Tw Gwyneth Bryn Heulog Brynteg Bryn Hyfryd Fairview Plas y Marlais Upper Law Street Capel Bwthyn			X					N
Brynhaulog and Fronhaul New Road			X					N
Swn Y Nant Foxglove Cottage			X					N

Receptor/receptor group	Residual operational effect of 'slight/minor' or greater significance							
	Land, Soils and Groundwater	Cultural Heritage	Landscape and Visual	Noise and Vibration	Terrestrial Ecology	Population	Climate	Taken forward to Stage 2
Maes Cadlawr Maes Cadlawr Farm			X	X				Y
Woodland Cottage Greenmeadow Farm Orchard Farm			X					N
Brynfro Farm			X					N
Brynsiriol			X					N
Ty Ysgubor			X					N
Brynllwarch Farm			X					N
Cefn Ydfa Farm House			X	X				Y
Gelli Las Farm			X	X				Y
Ty Mel			X					N
Pentwyn Farm				X				N
Cwmrisca Farm				X				N
Baiden Farm				X				N
Ton Phillip Farm			X	X				Y
Ty Gwalia			X					N
Cefn Parc Stud Farm			X					N
Ger Y Coed Rhyd Y Bontbren Farm			X					N
Tynton Farm			X	X				Y
Foel Fach Farm			X					N
Gadlys Farm			X	X				Y
Bryn Cynan Farm			X	X				Y
Birchfield Mill Tal-y-fedw Felin Gadlys House Fron Oleu			X					N
Heol-yr-Ysgol			X					N
Troed Y Rhiw Farm / Swn y Nant			X	X				Y
Nant y Neuadd Farm / Park Farm			X	X				Y
Ffynnon Iago Farm &Ty Gwn			X	X				Y
Pentyla Farm			X	X				Y
Aberbaiden Farm			X					N
Hafod Heulog Farm			X					N

Receptor/receptor group	Residual operational effect of 'slight/minor' or greater significance							
	Land, Soils and Groundwater	Cultural Heritage	Landscape and Visual	Noise and Vibration	Terrestrial Ecology	Population	Climate	Taken forward to Stage 2
Cae Mabifor Farm			X					N
Tyn-y-Waun Farm			X					N
Y Graig			X	X				Y
Caretakers Bungalow			X					N
Settlement of Maesteg			X					N
Settlement of Lletty Brongu			X					N
Settlement of Bettws			X					N
Settlement of Cefn Cribwr			X					N
Settlement of Kenfig Hill and Pyle			X					N
Settlement of Coedhirwaun			X					N
Settlement of Pen-y-fai			X					N
Settlement of North Cornelly / Cynffig			X					N
Wales Coastal Path			X					N
Cistercian Way			X					N
Users of on-Site / adjacent PRoW (including Ogwr Ridgeway Walk)			X			X		Y
Users of Cycle Routes			X					N
Users of the M4			X					N
Users of A48			X					N
Users of A4063			X					N
Users of A4107			X					N
Users of A473			X					N
Users of A4061			X					N
Users of A4229			X					N
Users of B4281			X					N
Users of B4265			X					N
Users of B4524			X					N
Users of South Wales Main Line Railway			X					N
Users of Maesteg Line Railway			X					N
Cilduady Farm				X				N
Baiden Farm				X				N
The Poultry Farm				X				N

Receptor/receptor group	Residual operational effect of 'slight/minor' or greater significance							
	Land, Soils and Groundwater	Cultural Heritage	Landscape and Visual	Noise and Vibration	Terrestrial Ecology	Population	Climate	Taken forward to Stage 2
Pentitla				X				N
Ffynnon Iago Farm				X				N
Troed Y Rhiw Farm				X				N
Nant Y Neuadd Farm				X				N
Ton Mawr Farm				X				N
Brynfro Farm				X				N
Bats (roosting)					X			N
Bats (Foraging and Commuting)					X			N
Invasive non-native species					X			N
Tourism						X		N
Business						X		N
Employment, Skills and Labour Market						X		N
Workforce spending and GVA						X		N
Atmosphere							X	N

15.5.3 Only those receptors identified in the final column of **Table 15.1** and **Table 15.2** as needing to be assessed in Stage 2 of the intra-project effects combined assessment have been considered in **Table 15.3** and **Table 15.4**. The interaction between the residual effects on these receptors has been examined in order to determine an overall combined significance of all identified residual effects in interaction. This significance of the combined residual effect has been determined by professional judgement.

Table 15.3 Intra-project Combined Residual Effect Interactions During Construction and Decommissioning (Stage 2)

Receptor	Landscape and visual	Terrestrial ecology	Traffic and Movement	Population	Mitigation	Significant intra-project combined effect?
Landscape features - hedgerows	The sensitivity of the existing landscape features is **medium**. Approximately 169 m of hedgerow would require removal due to the construction of the site access track and proposed infrastructure. However, 3.26 km of new hedgerow planting is proposed. Therefore, there is likely to be a **minor adverse** effect on existing landscape fabric (includes hedgerows), which is considered to be **not significant**.	The network of hedgerows is of **local** importance, given they are species-poor and contain native species. Only small discrete sections of hedgerow (totalling 169 m) would be removed. However, 3.26 km of new hedgerow planting is proposed. Therefore, the residual effect is anticipated to be **beneficial**, **permanent** and **significant** at the **Local level**.	N/A – intra-project effect not applicable to this factor.	N/A – intra-project effect not applicable to this factor.	Habitat Management Plan secured via planning condition. An Outline Habitat Management Plan is provided in **ES Volume III, Appendix 10.4: Net Benefit for Biodiversity Report**.	While the receptor is shared in both **ES Volume II, Chapter 8: Landscape and Visual** and **ES Volume II, Chapter 10: Terrestrial Ecology,** the receptor is considered differently, i.e., as a landscape feature of the Site or a habitat resource. The effects reported in one chapter would not change the scale or significance of the effect likely to be experienced in the other chapter. The combined effect is anticipated to be **not significant**.
Users of on-Site and adjacent PRoW (including Ogwr Ridgeway Walk)	PRoW users along the Ogwr Ridgeway Walk are considered to be a **high** sensitivity receptor. During construction and decommissioning, walkers would experience close-range views of construction/ decommissioning activities along the section passing through the Site. These phases would substantially alter the experience of walking this section of the route, resulting in a **temporary, indirect, short-term major adverse** residual effect which is **significant**.	N/A – intra-project effect not applicable to this factor.	PRoW users are considered as **high** sensitivity. Increased Site traffic and disruptions to PRoW could result in effects on perception of severance, pedestrian delay, non-motorised user amenity, fear and intimidation and road safety. The magnitude of impact is low with **minor adverse** effects. These are considered to be **not significant**.	Disruption to users of the Ogwr Ridgeway Walk (**high** value (sensitivity)) that runs through Site. There would be a residual **temporary, direct** and **short-term** effect to the users of the Ogwr ridgeway walk. This is considered to be **slight adverse** and **not significant**.	Access Management Plan (AMP) secured via condition. An Outline AMP has been prepared as part of this DNS Application (**ES Volume III, Appendix 13.2: Outline Access Management Plan**). Construction Traffic Management Plan (CTMP) secured via condition. An Outline CTMP has been prepared as part of the DNS Application (**ES Volume IV, Appendix 12.1: Outline Construction Traffic Management Plan**).	Users of on-site PRoW would experience a change in views and disruption including possible delays and temporary diversions. The combined effect is anticipated to be **temporary, short-term** and **significant**.
	PRoW users along the Ogwr Ridgeway Walk, Cistercian Way and Wales Coastal Path are considered to be a **high** sensitivity receptors. During construction and decommissioning, walkers would experience different	N/A – intra-project effect not applicable to this factor.	PRoW users are considered as **high** sensitivity. Increased Site traffic and disruptions to PRoW could result in effects on perception of severance, pedestrian delay, non-motorised user amenity, fear and	The value (sensitivity) of users of recreational routes in the wider study area is **medium**. Construction and decommissioning of the Proposed Development has the potential to effect accessibility of the recreational routes within	AMP secured via condition. An Outline AMP has been prepared as part of this DNS Application (**ES Volume III, Appendix 13.2: Outline Access Management Plan**). CTMP secured via condition. An Outline CTMP	Users of immediately adjacent PRoW would experience a change in views and possible disruption including delays and temporary diversions. The combined effect is anticipated to be

Receptor	Landscape and visual	Terrestrial ecology	Traffic and Movement	Population	Mitigation	Significant intra-project combined effect?
	scale views depending on the proximity to the Site and afforded screening. The closest walking routes (Ogwr Ridgeway Walk) would experience **temporary, indirect, short-term moderate adverse** residual effects which are **not significant**. Those further out would experience negligible to minor adverse effects.		intimidation and road safety. The magnitude of impact is low with **minor adverse** effects. These are considered to be **not significant**.	the area surrounding the Site. Following additional mitigation to minimise disruption, a temporary **slight adverse** residual effect on walkers, cyclists and horse riders, which is considered to be **not significant**, is anticipated.	has been prepared as part of the DNS Application (**ES Volume IV, Appendix 12.1: Outline Construction Traffic Management Plan**).	**temporary, short-term** and **not significant**.
Users of A4063	Users of the A4063 are considered to be of **low** sensitivity. During construction and decommissioning, road users would have highly filtered and intermittent views of on-going site activities, primarily glimpses of tall cranes during turbine erection / dismantling, visible above or between trees where gaps in the woodland allow. Lower-level activities would be likely be entirely screened by the roadside woodland even in the section closest to the Site. The residual effect would be temporary, indirect, short-term and **minor** to **moderate** adverse which is **not significant** for most of the route.	N/A – intra-project effect not applicable to this factor.	Users of the A4063 are considered to be of **low** sensitivity. Due to the increased construction/ decommissioning traffic movements, it is anticipated that a **minor adverse**, temporary and reversible residual effect would occur in relation to severance, driver delay, pedestrian delay, user amenity and road user and pedestrian safety. This residual effect is **not significant**.	N/A – intra-project effect not applicable to this factor.	CTMP secured via condition. An Outline CTMP has been prepared as part of the DNS Application (**ES Volume IV, Appendix 12.1: Outline Construction Traffic Management Plan**).	Users of the A4063 would experience both traffic related effects and highly filtered changes in view. However, consideration has been given to the duration of the effects and how these views would be experienced as part of a wider journey. These effects are not anticipated to result in significant intra-project combined effects on this receptor group as a result of the construction and decommissioning phases of the Proposed Development and the residual effect would be no worse than **moderate-minor adverse** and **not significant** for most of the route. This combined effect would be **temporary** and **short-term**.
Users of B4281	Users of the B4281 are considered to be of **medium** sensitivity. During construction and decommissioning, road users would have clear views of on-going construction/ decommissioning activities, particularly from the northern edge of Kenfig Hill where the road climbs	N/A – intra-project effect not applicable to this factor.	Users of the B4281 are considered to be of **medium** sensitivity. Due to the increased construction/ decommissioning traffic movements, it is anticipated that a **minor adverse**, temporary and reversible residual effect would occur in relation to severance, driver delay, pedestrian delay, user amenity and road user and pedestrian	N/A – intra-project effect not applicable to this factor.	CTMP secured via condition. An Outline CTMP has been prepared as part of the DNS Application (**ES Volume IV, Appendix 12.1: Outline Construction Traffic Management Plan**).	Users of the B4281 would experience both traffic related effects and changes in view. However, consideration has been given to the duration of the effects and how these views would be experienced as part of a wider journey. With this in mind, given the temporary nature of the effect and the transient way in which it

Receptor	Landscape and visual	Terrestrial ecology	Traffic and Movement	Population	Mitigation	Significant intra-project combined effect?
	toward the Site with few intervening visual barriers. The residual effect would be temporary, indirect, short-term and **moderate adverse** which is **significant**.		safety. This residual effect is **not significant**.			would be experienced, the intra-project combined effect is not anticipated to increase the scale of effect identified and would be no worse than **moderate adverse**, **temporary** and **short-term,** which is **significant**.

Table 15.4 Intra-project Combined Residual Effect Interactions During Operational Phase (Stage 2)

Receptor	Cultural Heritage	Landscape and Visual	Noise and Vibration	Population	Mitigation	Significant intra-project combined effect?
Llangynwyd Conservation Area	The Conservation Area is considered to be of **high** sensitivity. The Proposed Development will not physically affect the Conservation Area itself, but would visibly change its southern landscape setting through the introduction of various different forms of modern built development (wind turbines, solar arrays, and substation infrastructure). This will not compromise the ability to appreciate the geographical and topographical context of Llangynwyd village, but will erode the sense of historic rural remoteness experienced in certain views from within the Conservation Area. The residual effect is anticipated to be **indirect**, **temporary** and **long-term** and is considered to be **slight** to **moderate adverse** and **not significant**.	The views from the Conservation Area are considered to be of **high** sensitivity. The Proposed Development would be clearly visible on the horizon to the south with all six turbines visible. The turbines would introduce prominent vertical elements into a view that currently has a largely undeveloped skyline. There would be limited visibility of the solar arrays and substation infrastructure due to their low profile, distance and due to the fact, they closely follow the Site's rolling landform. The residual effect is anticipated to be **major adverse** which is **significant**.	N/A – intra-project effect not applicable to this factor.	N/A – intra-project effect not applicable to this factor.	No additional mitigation is proposed in addition to the proposed landscape planting.	The changes in views set out in **ES Volume II, Chapter 8: Landscape and Visual** have inherently been considered within the setting assessment reported within **ES Volume II, Chapter 7: Cultural Heritage**. While both assessments identify Llangynwyd Conservation Area as a receptor, the landscape and visual assessment considers users of (people within) the conservation area and the extent to which their view may change as a result of the Proposed Development. The cultural heritage assessment considers how the changes in views would alter how the conservation area is understood, appreciated and experienced. It therefore not appropriate to determine an intra-project combined effect for this receptor.

Receptor	Cultural Heritage	Landscape and Visual	Noise and Vibration	Population	Mitigation	Significant intra-project combined effect?
The Windsor Barn Gilfach Uchaf Farm Gilfach Ganol Farm	N/A – intra-project effect not applicable to this factor.	This cluster of **high** sensitivity properties is set down in a localised valley with views looking up towards the Site and trees to the south. In the least restricted views, the lower towers of the turbines would be screened by intervening landform, although the tower and hubs of T05, T01, T02, T03 and T04 will be visible. The residual effect is anticipated to be **moderate adverse** which is **significant**.	This cluster of properties is **high** sensitivity. The operation of the Proposed Development would introduce new noise generating sources within the Site. The wind turbines, solar PV modules and substation are anticipated to result in a **minor adverse** residual noise effect at these receptors, which is **not significant**.	N/A – intra-project effect not applicable to this factor.	No additional mitigation is proposed.	This receptor group would experience a change in view and noise levels. The intra-project combined effect is not anticipated to increase the scale of effect identified and would be no worse than **moderate adverse** and **significant**.
Ty Trisant Pentre Lodge Pant Isaf Pentre Farm Pantysgawen Farm Hendre Forgan Farm Tyn Yr Heol Farm	N/A – intra-project effect not applicable to this factor.	These **high** sensitivity properties have a moderate amount of vegetative cover upon their access/egress but there is potential for open views towards T06, which is the nearest turbine, and the blade tips of T3 and T4 appearing above the horizon but likely to be screened by intervening woodland vegetation. The residual effect is anticipated to be **moderate adverse** which is **not significant**.	This cluster of properties is **high** sensitivity. The operation of the Proposed Development would introduce new noise generating sources within the Site. The wind turbines, solar PV modules and substation are anticipated to result in a **minor adverse** residual noise effect (at worst) at these receptors, which is **not significant**.	N/A – intra-project effect not applicable to this factor.	No additional mitigation is proposed.	This receptor group would experience a change in view and noise levels. The intra-project combined effect is not anticipated to increase the scale of effect identified and would be no worse than **moderate adverse** and **not significant**.
Ty Talwyn Farm The Old Stables	N/A – intra-project effect not applicable to this factor.	These **high** sensitivity dwellings are nestled within the hillside of Cefngelli and partially enclosed further by forestry and trees within the ground of the properties. T1 to T5 are likely to be obscured by landform and trees. T6 is theoretically visible, but likely to be screened by forestry and trees close to the dwellings. The residual effect is anticipated to be **minor adverse** which is **not significant**.	This cluster of properties is **high** sensitivity. The operation of the Proposed Development would introduce new noise generating sources within the Site. The wind turbines, solar PV modules and substation are anticipated to result in a **minor adverse** residual noise effect at these receptors, which is **not significant**.	N/A – intra-project effect not applicable to this factor.	No additional mitigation is proposed.	This receptor group would experience a change in view and noise levels. The intra-project combined effect is not anticipated to increase the scale of effect identified and would be no worse than **minor adverse** and **not significant**.

Receptor	Cultural Heritage	Landscape and Visual	Noise and Vibration	Population	Mitigation	Significant intra-project combined effect?
Maes Cadlawr Maes Cadlawr Farm	N/A – intra-project effect not applicable to this factor.	These **high** sensitivity properties are set within the farmstead which includes numerous agricultural buildings. Situated on the north side of a valley cut by a local spring, the aspect of the land is to the east and southeast. A review of aerial photography shows that properties are of a generally northwest or north-north-westerly aspect, with their garden areas to their south side. There is some degree of enclosure by trees located along the small watercourse. However, oblique views, and views from the property curtilages, will extend to several of the proposed turbines situated on more elevated land to the south. The residual effect is anticipated to be **major adverse** which is **significant**. However, it is noted that the residents at these properties are financially involved with the Proposed Development.	This cluster of properties is **high** sensitivity. The operation of the Proposed Development would introduce new noise generating sources within the Site. The wind turbines, solar PV modules and substation are anticipated to result in a **minor adverse** residual noise effect at this receptor, which is **not significant**.	N/A – intra-project effect not applicable to this factor.	No additional mitigation is proposed.	This receptor would experience a change in view and noise levels. The intra-project combined effect is not anticipated to increase the scale of effect identified and would be no worse than **major adverse** and **significant**.
Cefn Ydfa Farm House	N/A – intra-project effect not applicable to this factor.	The property has a **high** sensitivity and is located less than 1 km from the nearest turbine (T01). The wireline shows T01 to T05 would be visible, with T01 and T02 the most prominent on the skyline, occupying a moderate portion of the view to the west. The other turbines would be well screened by the intervening landform, which lessens the overall visibility. Some screening is provided by garden vegetation, which would	This property is **high** sensitivity. The operation of the Proposed Development would introduce new noise generating sources within the Site. The wind turbines, solar PV modules and substation are anticipated to result in a **minor adverse** residual noise effect at this receptor, which is **not significant**.	N/A – intra-project effect not applicable to this factor.	No additional mitigation is proposed.	This receptor would experience a change in view and noise levels. The intra-project combined effect is not anticipated to increase the scale of effect identified and would be no worse than **moderate adverse** and **significant**.

Receptor	Cultural Heritage	Landscape and Visual	Noise and Vibration	Population	Mitigation	Significant intra-project combined effect?
		partially mitigate the visual impact, but oblique views would still likely be available, and turbines noticeable, but more so from first floor level. The residual effect is anticipated to be **moderate adverse** which is **significant**.				
Gelli Las Farm	N/A – intra-project effect not applicable to this factor.	This **high** sensitivity property would have partial views of the development to the west, although it is afforded additional screening from the woodland lining Nant Cefnydfa. The wireline shows T01 to T05 would be visible, with T01 and T02 the most prominent on the skyline, occupying a moderate portion of the view to the west. The other turbines would be well screened by the intervening landform, which lessens the overall visibility. The visible turbines would still likely form prominent new elements above the treeline. Some filtering may also be provided by hedgerows and garden vegetation. The residual effect is anticipated to be **moderate adverse**, which is **not significant**.	This property is **high** sensitivity. The operation of the Proposed Development would introduce new noise generating sources within the Site. The wind turbines, solar PV modules and substation are anticipated to result in a **minor adverse** residual noise effect at this receptor, which is **not significant**.	N/A – intra-project effect not applicable to this factor.	No additional mitigation is proposed.	This receptor would experience a change in view and noise levels. The intra-project combined effect is not anticipated to increase the scale of effect identified and would be no worse than **moderate adverse** and **not significant**.
Ton Phillip Farm	N/A – intra-project effect not applicable to this factor.	This **high** sensitivity property is generally of north-south orientation whereby principal views are likely to be towards the coast to the south. Potential visibility of the proposed turbines is screened by the sharply rising landform, in combination with field boundary vegetation to the north of the dwelling. The residual effect is anticipated	This property is **high** sensitivity. The operation of the Proposed Development would introduce new noise generating sources within the Site. The wind turbines, solar PV modules and substation are anticipated to result in a **minor adverse** residual noise effect at this receptor, which is **not significant**.	N/A – intra-project effect not applicable to this factor.	No additional mitigation is proposed.	This receptor would experience a change in view and noise levels. The intra-project combined effect is not anticipated to increase the scale of effect identified and would be no worse than **minor-moderate adverse** and **not significant**.

Receptor	Cultural Heritage	Landscape and Visual	Noise and Vibration	Population	Mitigation	Significant intra-project combined effect?
		to be **minor- moderate adverse**, which is **not significant**.				
Tynton Farm	N/A – intra-project effect not applicable to this factor.	This **high** sensitivity property is set down in a localised valley with trees / a mature hedge to the south. There is open visibility from the access driveway to and from the property. At only 827 m from the nearest turbine (T05), all six turbines would be visible on the horizon, with T05 appearing as a prominent vertical element. While the property benefits from some screening by valley vegetation, the scale and proximity of the turbines, particularly when viewed from the access track and more elevated parts of the property grounds, would create a significant visual effect. The residual effect is anticipated to be **moderate-major adverse,** which is **significant**.	This property is **high** sensitivity. The operation of the Proposed Development would introduce new noise generating sources within the Site. The wind turbines, solar PV modules and substation are anticipated to result in a **minor adverse** residual noise effect at this receptor, which is **not significant**.	N/A – intra-project effect not applicable to this factor.	No additional mitigation is proposed.	This receptor would experience a change in view and noise levels. The intra-project combined effect is not anticipated to increase the scale of effect identified and would be no worse than **moderate-major adverse** and **significant**.
Gadlys Farm	N/A – intra-project effect not applicable to this factor.	This **high** sensitivity property is located at under 1 km from the nearest turbine (T05). The wireline shows all six turbines would be visible on the horizon to the south, with T05 being the most prominent. The property has principal views oriented toward the Proposed Development, with garden areas that also face south. The turbines would appear as prominent vertical elements, substantially changing the character of views from the property. Limited intervening vegetation	This property is **high** sensitivity. The operation of the Proposed Development would introduce new noise generating sources within the Site. The wind turbines, solar PV modules and substation are anticipated to result in a **minor adverse** residual noise effect at this receptor, which is **not significant**.	N/A – intra-project effect not applicable to this factor.	No additional mitigation is proposed.	This receptor would experience a change in view and noise levels. The intra-project combined effect is not anticipated to increase the scale of effect identified and would be no worse than **major adverse** and **significant**.

Receptor	Cultural Heritage	Landscape and Visual	Noise and Vibration	Population	Mitigation	Significant intra-project combined effect?
		means the turbines would be clearly visible from main living areas and throughout the garden. The scale, proximity and movement of the turbines would create a significant visual effect. The residual effect is anticipated to be **major adverse** and **significant**.				
Bryn Cynan Farm	N/A – intra-project effect not applicable to this factor.	This **high** sensitivity property would have visibility from the rear façade of the property alongside part of the adjoining garden. The wireline shows all six turbines would be visible on the skyline, with T05 most prominent at just over 1 km distance. However, views would be restricted by nearby agricultural buildings and garden tree planting to the extent that T01, T02, T03 and T4 would be fully or partially obscured. T05 and T06 would be visible and would form prominent vertical elements of the view. The residual effect is anticipated to be **moderate-major adverse** and **significant**.	This property is **high** sensitivity. The operation of the Proposed Development would introduce new noise generating sources within the Site. The wind turbines, solar PV modules and substation are anticipated to result in a **minor adverse** residual noise effect at this receptor, which is **not significant**.	N/A – intra-project effect not applicable to this factor.	No additional mitigation is proposed.	This receptor would experience a change in view and noise levels. The intra-project combined effect is not anticipated to increase the scale of effect identified and would be no worse than **moderate-major adverse** and **significant**.
Troed Y Rhiw Farm / Swn y Nant	N/A – intra-project effect not applicable to this factor.	The **high** sensitivity property is located over 1.5 km from the nearest turbine and is partially screened by a belt of conifers along the eastern boundary of the garden and farm buildings beyond. The wireline indicates potential views of the Proposed Development from the access track and garden of the rotors of T06 and T03 and blades of T04, T02 and T01, however in reality these would likely be	This property is **high** sensitivity. The operation of the Proposed Development would introduce new noise generating sources within the Site. The wind turbines are anticipated to result in a **minor adverse** residual noise effect at this receptor, which is **not significant**.	N/A – intra-project effect not applicable to this factor.	No additional mitigation is proposed.	This receptor would experience a change in view and noise levels. The intra-project combined effect is not anticipated to increase the scale of effect identified and would be no worse than **minor adverse** and **not significant**.

Receptor	Cultural Heritage	Landscape and Visual	Noise and Vibration	Population	Mitigation	Significant intra-project combined effect?
		screened in most places. The residual effect is anticipated to be **minor adverse** and **not significant**.				
Nant y Neuadd Farm / Park Farm	N/A – intra-project effect not applicable to this factor.	Landform and intervening agricultural buildings at close range are predicted to predominantly screen the proposed turbines from this **high** sensitivity property and garden. Less restricted views are predicted from the access track on the approach to the property. The wireline indicates that the rotors of T6 and T3 and blades of T4, T2 and T1 would be potentially visible, however this does not account for the screening provided by the close range agricultural buildings. The residual effect is anticipated to be **minor-moderate adverse** and **not significant**.	This property is **high** sensitivity. The operation of the Proposed Development would introduce new noise generating sources within the Site. The wind turbines are anticipated to result in a **minor adverse** residual noise effect at this receptor, which is **not significant**.	N/A – intra-project effect not applicable to this factor.	No additional mitigation is proposed.	This receptor would experience a change in view and noise levels. The intra-project combined effect is not anticipated to increase the scale of effect identified and would be no worse than **minor-moderate adverse** and **not significant**.
Ffynnon Iago Farm &Ty Gwn	N/A – intra-project effect not applicable to this factor.	Intervening planting along the property boundary and public road corridor would largely restrict any potential views from the **high** sensitivity dwelling, garden or access track. Rotor movement of T06 and T03 may be perceived in winter after leaf-fall from the farmhouse only. The residual effect is anticipated to be **minor adverse** and **not significant**.	This property is **high** sensitivity. The operation of the Proposed Development would introduce new noise generating sources within the Site. The wind turbines, solar PV modules and substation are anticipated to result in a **minor adverse** residual noise effect at this receptor, which is **not significant**.	N/A – intra-project effect not applicable to this factor.	No additional mitigation is proposed.	This receptor would experience a change in view and noise levels. The intra-project combined effect is not anticipated to increase the scale of effect identified and would be no worse than **minor adverse** and **not significant**.
Pentyla Farm	N/A – intra-project effect not applicable to this factor.	There is a potential for views of the Proposed Development from the rear of this **high** sensitivity property and the access road. T03 and T06 would be clearly visible between mature trees along the	This property is **high** sensitivity. The operation of the Proposed Development would introduce new noise generating sources within the Site. The wind turbines, solar PV modules and substation are anticipated	N/A – intra-project effect not applicable to this factor.	No additional mitigation is proposed.	This receptor would experience a change in view and noise levels. The intra-project combined effect is not anticipated to increase the scale of effect identified and would be no

Receptor	Cultural Heritage	Landscape and Visual	Noise and Vibration	Population	Mitigation	Significant intra-project combined effect?
		curtilage of the property, whereas the remaining turbines predominantly restricted by intervening woodland cover. The residual effect is anticipated to be **moderate adverse** and **significant**.	to result in a **minor adverse** residual noise effect at this receptor, which is **not significant**.			worse than **moderate adverse** and **significant**.
Y Graig	N/A – intra-project effect not applicable to this factor.	This **high** sensitivity property is located to the northeast of the Proposed Development with the wireline indicating that all six turbines would be visible in westerly and south-westerly views. T01 would appear at a considerable scale in views from the property and its curtilage, with the rotor sweeps being prominently visible. The property orientation, with principal windows aligned north-west to south-east, would be at a juxtaposition with the wind turbines and provide some mitigation through the dwelling itself blocking direct views from certain principal rooms, although the turbines would be highly prominent in views from the domestic curtilage, access areas, and any westward-facing windows. The residual effect is anticipated to be **major adverse** and **significant**.	This property is **high** sensitivity. The operation of the Proposed Development would introduce new noise generating sources within the Site. The wind turbines, solar PV modules and substation are anticipated to result in a **minor adverse** residual noise effect at this receptor, which is **not significant**.	N/A – intra-project effect not applicable to this factor.	No additional mitigation is proposed.	This receptor would experience a change in view and noise levels. The intra-project combined effect is not anticipated to increase the scale of effect identified and would be no worse than **major adverse** and **significant**.
Users of on-Site / adjacent PRoW (including Ogwr Ridgeway Walk)	N/A – intra-project effect not applicable to this factor.	During operation, where the Ogwr Ridgeway Walk route (**high** sensitivity) passes through or close to the Site (within approximately 2 km), the turbines would appear as dominant vertical elements at very close range, creating a dramatic change to the visual experience. From the	N/A – intra-project effect not applicable to this factor.	The value (sensitivity) of users of the Ogwr Ridgeway Walk that runs through the Site as receptors is **high**. No direct changes (such as diversions) would occur during the operation of the Proposed Development and maintenance agreements and signage	AMP secured via condition. Planning obligation (Section 106 contributions).	Users of the PRoW within the Site would experience a change in views as well as improved maintenance and signage of PRoW. On balance, the beneficial effect is not anticipated to reduce the scale of effect identified within the landscape and visual assessment and the intra-

Receptor	Cultural Heritage	Landscape and Visual	Noise and Vibration	Population	Mitigation	Significant intra-project combined effect?
		section passing directly through the Site, walkers would experience turbines from multiple angles and perspectives as they move along the route. The solar arrays and substation would also be clearly visible from sections of the route within and close to the Site, appearing as substantial new elements in the landscape. From elevated sections of the route, walkers would have clear views down onto the solar arrays, which would appear as distinct patterns contrasting with the surrounding moorland and grassland. The residual effect is anticipated to be **major adverse** and **significant**, for the Ogwr Ridgeway Walk.		will be agreed between the Applicant and Neath Port Talbot Council and Bridgend County Borough Council prior to implementation. Therefore, there is likely to be a permanent **slight beneficial** residual effect on walkers, cyclists and horse riders, which is considered to be **not significant**. Recreational routes in the wider study area would not be affected by the Proposed Development.		project combined effect would remain as set out in the landscape and visual chapter. As a worst case scenario, the intra-project combined effect on this receptor group would therefore be **adverse** and **significant**.

15.5.4 The assessment has concluded that the residual intra-project combined effects on the following receptors would be **significant**:

- Users of the Ogwr Ridgeway Walk (during construction and decommissioning phases) due to the short term changes in view across parts of the footpath as described in **ES Volume II, Chapter 8: Landscape and Visual**, the increased perception of severance, increased pedestrian delay and changes to user amenity, fear and intimidation and safety as described in **ES Volume II, Chapter 12: Traffic and Movement** and temporary disruption identified in as described in **ES Volume II, Chapter 13: Population**;
- Users of the Ogwr Ridgeway Walk (during operational phase) due to the long term changes in view across parts of the footpath as described in **ES Volume II, Chapter 8: Landscape and Visual**, and long-term improvements for users following maintenance as identified and described in **ES Volume II, Chapter 13: Population**;
- Users of B4281 (during construction and decommissioning phases) due to the short term changes in view particularly from the northern edge of Kenfig Hill as described in **ES Volume II, Chapter 8: Landscape and Visual**, the increased perception of severance, increased driver delay and pedestrian delay and changes to user amenity, fear and intimidation and safety as described in **ES Volume II, Chapter 12: Traffic and Movement**; and
- The Windsor Barn, Gilfach Uchaf Farm, Gilfach Ganol Farm, Maes Cadlawr and Maes Cadlawr Farm, Cefn Ydfa Farm House, Tynton Farm, Gadlys Farm, Bryn Cynan Farm, Pentyla Farm and Y Graig during operation due to the long term changes in view from these dwellings as described in **ES Volume II, Chapter 8: Landscape and Visual** (and supporting appendices), and an increase in noise as described in **ES Volume II, Chapter 9: Noise and Vibration**.

15.5.5 The assessment has concluded that the residual intra-project combined effects on all other receptors/receptor groups would be **not significant**.

15.6 Additional Mitigation

15.6.1 No additional mitigation measures are proposed for the intra-project combined effects identified, other than the measures described in **Table 15.3** and **Table 15.4**.

15.7 Difficulties and Uncertainties

15.7.1 No difficulties or uncertainties have been identified in the completion of the intra-project combined effects assessment, over and above those relevant difficulties and uncertainties documented in **ES Volume II, Chapters 5 to 14**.