

# 18 Summary of Residual Effects

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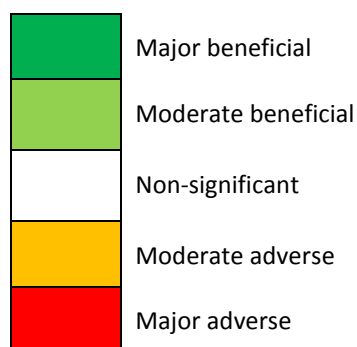
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# 18 Summary of Residual Effects

## 18.1 Introduction

18.1.1 Tables 18.1 and 18.2 provide a quick reference to the significant residual environmental effects identified in the technical sections of this Environmental Impact Assessment Report (EIAR), as well as a cross reference to the relevant mitigation measures identified.

18.1.2 The residual effects are highlighted in a “traffic light” formula for easy identification of beneficial and adverse effects as shown below. Text in **bold** shows where an effect is considered to be significant.



18.1.3 The final column on Tables 18.1 and 18.2 provides a comparison of the residual effects identified for the Existing Development and the Proposed Development.

18.1.4 Table 18.3 provides a summary of the cumulative effects of the Proposed Development in combination with other proposed, consented and operation developments within the area.

**Table 18.1 - Summary of Residual Effects – Construction and Decommissioning/Restoration Phases**

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect		Comparison with the Existing Development
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse	
<b>Landscape and Visual</b>						
<i>Landscape Character</i>						
Landscape Character Types and Sub-Types	Worst-case additional Minor	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process	Worst-case additional Minor	Adverse	N/A
<i>Visual Receptors</i>						
Visual receptors within the study area	Worst-case additional Minor	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process	Worst-case additional Minor	Adverse	N/A
<b>Ecology and Nature Conservation</b>						
Loss of habitat: blanket bog and wet modified bog	Minor	Adverse	CEMP, ECoW monitoring	Minor	Adverse	Larger extent of habitat loss but no greater level of significance of effects are anticipated beyond those arising from the Existing Development.
<b>Ornithology</b>						
Curlew: Disturbance and displacement	Minor	Adverse	BBPP and pre-construction surveys.	Minor	Adverse	No greater significance of effects are anticipated beyond those arising from decommissioning of the Existing Development.
Golden Plover: Disturbance and displacement	Minor	Adverse	Spatial and temporal restrictions of construction activity if required.	Minor	Adverse	

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect		Comparison with the Existing Development
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse	
<b>Noise and Vibration</b>						
Construction /Decommissioning site noise	Not significant	Adverse	Control of working hours and best working practises. To be detailed within the CEMP	Not significant	Adverse	No change of significance.
<b>Cultural Heritage</b>						
12 heritage assets – No direct physical impacts predicted (HH01, HH05, HH06, HH07, HH09, HH10, HH11, HH15, HH16, HH17, HH21, HH23)	Neutral	N/A	N/A	Neutral	N/A	No material difference. These sites have been identified during the assessment but will remain unaffected by the Proposed Development.
One heritage asset not predicted to be directly impacted, but located near site works (HH03)	Minor	Adverse	Those heritage assets located close to Proposed Development will be appropriately delineated to avoid unnecessary disturbance.	Negligible	Neutral	No material difference. If impacts on this site are avoided during development, through the committed mitigation measures, there will be no difference between the Existing Development and Proposed Development.
Ten heritage assets – Direct physical impacts predicted  HH02, HH04, HH12, HH13, HH14, HH18, HH20, HH22 HH08, HH19	Minor  Moderate	Adverse	A programme of archaeological mitigation to be agreed with WoSAS. This may include evaluation, excavation and recording during an archaeological watching brief.	Minor	Adverse	There is potential for damage to heritage assets which would otherwise be left undisturbed and in situ.

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect		Comparison with the Existing Development
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse	
Direct impact: Potential for damage to previously unrecorded features	Moderate	Adverse	An archaeological watching brief will be maintained during all ground-breaking works across the southern part of the site  This will ensure any previously unrecorded archaeological deposits are identified and recorded.	Minor	Adverse	There is potential for damage to unrecorded archaeological deposits which would otherwise be left undisturbed and in situ.
<b>Geology, Hydrology and Hydrogeology</b>						
Changes to groundwater flow regime	Minor	Adverse	Pre-construction site investigation. CEMP and construction site management.	Negligible	Adverse	No change in significance as the groundwater regime is similar.
Removal of and impact on peat	Minor	Adverse	Pre-construction site investigation. Avoidance of peat for borrow pit excavations.  Avoidance of deep peat where possible for access tracks (may be unavoidable over a small number of very short stretches).	Negligible	Adverse	No change in significance.
Impact on downstream fluvial flood risk	Major	Adverse	Detailed Drainage Strategy to be developed and agreed with SEPA and SLC. To detail drainage design to slow surface water flows and ensure that runoff from hard surfaces will be controlled.  Appropriate design of water crossings to maintain continuous flows.	Negligible	Adverse	No change in significance.
Pollution from sediment run-off	Major	Adverse	50 m buffer around watercourses wherever feasible (minimum 30 m	Minor	Adverse	Construction effects only therefore not

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect		Comparison with the Existing Development
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse	
			for a localised stretch of access track near the Windrow Burn). Water quality monitoring. CEMP and construction site management.			relevant in terms of any current/ongoing effects from the Existing Development.
Pollution from chemical contaminated run-off	Major	Adverse		Minor	Adverse	
Mobilisation of historical contamination	Major	Adverse	Detailed ground investigations including testing of bing material for suitability prior to its use in construction.	Negligible	Adverse	
Loss of bank integrity	Major	Adverse	CEMP and construction site management.	Negligible	N/A	
Pollution from foul drainage	Major	Adverse	50 m buffer around watercourses wherever feasible (minimum 30 m for a localised stretch of access track near the Windrow Burn). Water quality monitoring. CEMP and construction site management.	Minor	Adverse	
<b>Transport and Traffic</b>						
Traffic impact during construction and decommissioning	Negligible	Adverse	Construction Traffic Management Plan	Negligible	Adverse	N/A
<b>Socio-Economic</b>						
Economic impact of £17.1 million and 152 job years in South Lanarkshire	Minor	Beneficial	N/A	Minor	Beneficial	Additional investment in South Lanarkshire economy

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect		Comparison with the Existing Development
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse	
Economic impact of £46.1 million and 423 job years in Scotland	Negligible	Beneficial	N/A	Negligible	Beneficial	Additional investment in Scottish economy
<b>Expenditure of construction workers in local economy</b>	<b>Moderate</b>	<b>Beneficial</b>	<b>N/A</b>	<b>Moderate</b>	<b>Beneficial</b>	<b>Additional investment in South Lanarkshire economy</b>
<b>Aviation, Radar and Telecommunication</b>						
Effects on aviation, radar and telecommunication interests during construction and decommissioning	Negligible	Neutral	Aviation lighting will be installed if requested by the MoD.	Negligible	Neutral	No Change
<b>Shadow Flicker</b>						
No effects anticipated during construction or decommissioning.						No Change



**Table 18.2 - Summary of Residual Effects – Operation**

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect		Comparison with the Existing Development
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse	
<b>Landscape and Visual (Bold text indicates a Significant Effect)</b>						
<i>Landscape Character</i>						
Landscape Character Types in which the Turbines are located	Worst-case Major/ moderate	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process	<b>Worst-case Major/ moderate</b>	<b>Adverse</b>	No notable change to the character of this part of the landscape when compared with the experience over the last 20 years.
Other Landscape Character Types within 10km	Worst-case Major/ moderate up to 3 km from the site. Moderate (significant) up to 6 km.	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process	<b>Worst-case Major/ moderate up to 3 km from the site</b>	<b>Adverse</b>	Whilst the effect on landscape character would be greater from the PD, this difference would be mitigated by the existing impact to the local landscape

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect		Comparison with the Existing Development
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse	
						character which already occurs as a result of the other schemes.
Other Landscape Character Types between 10km and 15km	Worst-case moderate (non-significant).	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process	Worst-case moderate (non-significant)	Adverse	As with the landscape within 10km, the ED beyond 10 km is now largely de minimis due to surrounding development. This same context serves to reduce the potential impact of the PD, which whilst greater would also not be significant at this distance.
<b>Visual Receptors</b>						

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect		Comparison with the Existing Development
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse	
Assessment Viewpoints (VP1, 2, 3, 4, 5, 9, 12, 13, 16 & 17)	Significant Effect on 10 of the 17 representative viewpoints, extending up to 9 km from the site.	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process	<b>Moderate</b>	<b>Adverse</b>	The PD would be of a larger scale but would largely be visible from the same locations in the landscape. Whilst it would result in greater visual effects these would be mitigated by the context of additional existing wind energy in the locality. This will be further reinforced by additional consented developments.
Assessment Viewpoints (VP10, 11 & 15)	Moderate	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process	Moderate	Adverse	
Assessment Viewpoints (VP6 & 7)	Moderate/ Minor to Moderate	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process	Moderate/ Minor to Moderate	Adverse	
Assessment Viewpoints (VP8 & 14)	Moderate/ Minor	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process	Moderate/ Minor	Adverse	
Residential properties and settlements	Significant effects at: 6 of the 23 properties / groups within 2km; other residential properties up to 5km,	Adverse	N/A	<b>Significant effects at: six of the 23 properties / groups within 2km; other residential properties up to 5km,</b>	Adverse	

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect		Comparison with the Existing Development
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse	
	concentrated mainly within Coalburn & Douglas.			<b>concentrated mainly within Coalburn &amp; Douglas.</b>		overbearing on visual amenity.
Roads and Railways	Significant effects limited to the section of the A70 within up to 3 km to 4 km.	Adverse		<b>Significant effects limited to the section of the A70 within up to 3km to 4km.</b>	Adverse	Whilst the PD would result in greater visual effects these would be mitigated by the context of additional existing wind energy in the locality which have come forward since the ED was constructed.
Footpaths and Cycleways	Significant effects limited to Core Paths, Aspirational Core Paths and Wider Network paths within 2 km.	Adverse		<b>Significant effects limited to Core Paths, Aspirational Core Paths and Wider Network paths within 2km.</b>	Adverse	The Proposed Development would be of a larger scale, but would largely result in effects that would affect the same areas and where additional existing wind energy has come forward since the ED was constructed

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect		Comparison with the Existing Development
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse	
						which has already extended the impacts to cover these areas.
<b>Ecology and Nature Conservation</b>						
Bats: collision risk for <i>Nyctylus</i> species	Minor	Adverse	Minimum turbine set-back distance of 50m from blade tip to trees	Minor	Adverse	Fewer, but larger turbines compared to the Existing Development. Due to lack of roost sites and relatively low activity levels, no increase in significance is predicted when considered in the context of species' regional populations.
<b>Ornithology</b>						
Curlew: displacement	Minor	Adverse	None required	Minor	Adverse	No greater significance of effects is anticipated beyond those arising from operation of the
Golden plover: displacement	Minor	Adverse		Minor	Adverse	
Curlew: Collision risk	Minor	Adverse		Minor	Adverse	

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect		Comparison with the Existing Development
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse	
Golden plover: Collision risk	Minor	Adverse		Minor	Adverse	Existing Development.
<b>Noise and Vibration</b>						
Operational noise	Not Significant	Adverse	Operational monitoring to ensure compliance, with the option of selective constraint of turbine operation if found to be a requirement.	Not Significant	Adverse	No change of significance
<b>Cultural Heritage</b>						
No predicted impact on the setting of 31 heritage assets, including six scoped out of assessment due to no predicted inter-visibility (HH101, HH106, HH108-HH111, HH117-HH124, HH126-HH140, HH142, HH143)	No Change	Neutral	N/A	No Change	Neutral	No material difference.
Potential impact on the setting of 13 heritage assets (HH102, HH103, HH104, HH105, HH107, HH112, HH113, HH114, HH115, HH116, HH125, HH141, HH144)	Negligible - Minor	Adverse	N/A	Negligible - Minor	Adverse	The turbines will be more prominent than the Existing Development. However, the effect on setting as a result of the Proposed Development is assessed as not significant.

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect		Comparison with the Existing Development
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse	
Potential impacts on the setting of the new Lanark World Heritage Site (HH201)	Minor	Adverse	N/A	Minor	Adverse	The turbines of the Proposed Development are larger and will have greater inter-visibility with outer aspects of the WHS boundary, but this is not considered to create a setting impact.
<b>Geology, Hydrology and Hydrogeology</b>						
Surface water drainage including downstream flood risk	Major	Adverse	50 m buffer around watercourses wherever feasible (minimum 30 m for a localised stretch of access track near the Windrow Burn). Detailed Drainage Strategy to be developed and agreed with SEPA and SLC. To detail drainage design to slow surface water flows and ensure that runoff from hard surfaces will be controlled. Appropriate design of water crossings to maintain continuous flows.	Negligible	Adverse	No change in significance.
Alteration to fluvial geomorphology	Major	Adverse	Appropriately designed drainage and watercourse crossings.	Negligible	Adverse	No change in significance
<b>Transport and Traffic</b>						
Traffic impact during operation	Negligible	Adverse	Construction Traffic Management Plan	Negligible	Adverse	No Change

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect		Comparison with the Existing Development
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse	
<b>Socio-Economic</b>						
Annual economic impact of £0.7 million and 6 jobs in South Lanarkshire	Negligible	Beneficial	N/A	Negligible	Beneficial	Additional investment in South Lanarkshire economy
Annual economic impact of £1.1 million and 9 jobs in Scotland	Negligible	Beneficial	N/A	Negligible	Beneficial	Additional investment in Scottish economy
Revenue from shared ownership	Moderate	Beneficial	N/A	Moderate	Beneficial	Additional investment and capacity building in the local area
Payment of an estimated £0.9 million in Non-Domestic Rates	Negligible	Beneficial	N/A	Negligible	Beneficial	Additional public sector revenue
Effect on tourism assets	Negligible	Adverse	N/A	Negligible	Adverse	No Difference
Effect on accommodation providers	Negligible	Adverse	N/A	Negligible	Adverse	No Difference
Effect on tourism routes	Negligible	Adverse	N/A	Negligible	Adverse	No Difference
Effect of proposed investment in tourism infrastructure	Moderate	Beneficial	N/A	Moderate	Beneficial	Additional investment in the area's tourism infrastructure
Effect on proposed investment in path network	Moderate	Beneficial	N/A	Moderate	Beneficial	Improved public access and recreational offering



Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect		Comparison with the Existing Development
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse	
<b>Aviation, Radar and Telecommunications</b>						
Effects on telecommunications and TV reception during the operational period	Negligible	Neutral	None required	Negligible	Neutral	No Change
Effects on MoD low flying interests during the operational period	Negligible	Neutral	Aviation lighting will be installed.	Negligible	Neutral	No Change
Effects on NATS infrastructure during the operational period	Major	Adverse	Mitigation measure agreed between the Applicant and NATS	Negligible	Neutral	No Change
Effects on Glasgow Airport infrastructure during the operational period	Major	Adverse	Mitigation measure agreed between the Applicant and Glasgow Airport	Negligible	Neutral	No Change
<b>Shadow Flicker</b>						
Shadow flicker effects on residential properties	None	N/A	N/A	None	N/A	No effect, therefore no greater effect beyond that arising from operation of the Existing Development.

**Table 18.3 – Cumulative Effects**

Construction, Operation or Decommissioning of the Proposed Development	Description of Effect	Proposed, Consented and Operational Developments	Significance	Beneficial/ Adverse	Comparison with the Existing Development
<b>Landscape and Visual ((Bold text indicates a Significant Effect))</b>					
<i>Scenario 1</i>					
Landscape Character	In this first cumulative scenario the character of the landscape context within which the Proposed Development is located would be markedly different. With reference to the typologies referred to in the SLLCSWE, these schemes collectively create a ‘wind turbine landscape’ which would extend over the two character types within which the Proposed Development is located and others in the locality of the site. In this context, the introduction of the Proposed Development would not alter the defining characteristics of the character types in the local area, but would instead reinforce the existing characteristics of the baseline landscape.				
Visual Receptors	Measured against this baseline in cumulative scenario 1, whilst the overall combined impact might be greater, the additional effects arising as a result of introducing the Proposed Development would typically be less significant than reported earlier in the main assessment. Indeed, the significant effects identified in the main assessment for the areas around Coalburn and Braehead; the eastern part of Douglas; the farmsteads and dwellings scattered along the eastern side of Bellfield Road; and properties in and around Lesmahagow, Brocketsbrae, Hawksland, Douglas Water and Rigsid; would reduce to a non-significant level				
<i>Scenario 2</i>					
	Given the relatively high number of operational and consented schemes considered in cumulative scenario 1, the change to the baseline brought about by the other schemes in planning in scenario 2 would be minimal. Therefore, it is not considered that the cumulative effects would be discernibly greater in cumulative scenario 2 than in scenario 1 and no additional significant cumulative effects are predicted.				
<i>Scenario 3</i>					
	Scenario 3 considers the proposed Douglas West Wind Farm Extension and revised Cumberhead Wind Farm proposals alongside the other consented and proposed schemes considered in scenarios 1 and 2. Both the Douglas West Wind Farm Extension and the revised Cumberhead Wind Farm, would be located within the heart of the cluster of developments that are either already operational or consented in the vicinity of the site. The effect of this would be to further reinforce the scale and nature of the existing wind farm landscape in this part of South Lanarkshire that already exists to a degree and would be greatly expanded following the introduction of the consented schemes considered previously in scenario 1				

Construction, Operation or Decommissioning of the Proposed Development	Description of Effect	Proposed, Consented and Operational Developments	Significance	Beneficial/ Adverse	Comparison with the Existing Development
<b>Ecology and Nature Conservation</b>					
Construction/ Operation & Decommissioning	Habitat loss to blanket bog	All	Minor	Adverse	Minimal increase in blanket bog habitat loss and collision risk for bats compared to the ED, but unlikely to reach significance at a regional level.
Operation	Collision risk/ barotrauma to bats	All	Minor / Negligible	Adverse/ Neutral	
<b>Ornithology</b>					
Construction & Operation	Curlew: Disturbance and displacement	All	Minor	Adverse	No greater significance of effects is anticipated beyond those arising from operation of the ED cumulatively with the operational, consented and proposed wind farms considered in the assessment.
<b>Noise and Vibration</b>					
Operation	Wind turbine noise	All	Not significant	Adverse	No change
<b>Cultural Heritage</b>					
Operation	Potential cumulative effect on heritage assets arising from placement of the Proposed Development alongside other wind farms	All	Minor-Negligible	Adverse	There will be a slight incremental increase on the setting of monuments due to the increase in turbine height, but in general the turbines will be embedded within an existing array, replacing existing turbines.

Construction, Operation or Decommissioning of the Proposed Development	Description of Effect	Proposed, Consented and Operational Developments	Significance	Beneficial/ Adverse	Comparison with the Existing Development
<b>Geology, Hydrology, Hydrogeology</b>					
Cumulative effects on geology, hydrology and hydrogeology are considered as negligible.					No changes
<b>Traffic and Transport</b>					
Construction	Concurrent construction timescales for the Proposed Development and nearby developments	All	Negligible	Adverse	N/A
<b>Socio-economic, Tourism, Recreation and Land Use</b>					
Operation	Visual impact on tourism receptors	All wind Farms	Minor	Adverse	
Operation	Help local renewable supply chain	All wind Farms	Minor	Beneficial	
Operation	Regional and Local economy and employment	All wind Farms	Minor	Beneficial	
<b>Aviation, Radar and Telecommunications</b>					
Cumulative effects on aviation, radar or telecommunications are considered as negligible.					
<b>Shadow Flicker</b>					
None - There are inhabited residential receptors within the study area					No effect, therefore no greater effect beyond that arising from operation of the Existing Development and other developments in the local area.