15 Summary of Effects and Schedule of Environmental Mitigation

15.1 Introduction

15.1.1 This chapter summarises the mitigation measures proposed in each of the technical chapters to avoid, reduce or offset impacts which could otherwise result in significant residual environmental effects. In addition, good practice environmental management measures and commitments have been proposed to further reduce environmental effects which are not considered to result in likely significant effects.

15.1.2 The design process aimed to 'design out' the potential for significant environmental effects as much as reasonably possible. This chapter does not summarise 'mitigation by design' . Embedded mitigation in the form of design solutions is presented in **Chapter 3: Evolution of Design and Alternatives (Volume 1)**.

15.1.3 The majority of pre-construction and construction phase mitigation would be delivered through a Construction Environmental Management Plan (CEMP). The outline content of the proposed CEMP is provided in **Technical Appendix 2.1(TA) (EIAR Volume 4**). Further details on specific measures to be included in the CEMP are contained in each of the technical chapters of the EIAR, where relevant.

15.1.4 Throughout the EIAR, technical disciplines have considered the likely significant effects of the Proposed Development with consideration of embedded mitigation[1] and commitments. Where significant effects have been identified, additional[2] mitigation is proposed to minimise these effects. A summary of mitigation proposed is provided in **Table 15.1** along with the residual effects for each technical assessment. It is anticipated that the mitigation measures outlined in this table would be secured through appropriately worded conditions of consent.

[1] Embedded mitigation measures, are those captured through design and/or best practice.

[2] In addition to embedded mitigation measures.

Table 15.1: Summary of Effects

Topic	Potential Effect	Mitigation Proposed (embedded and additional)	Means of Implementation	Residual Effect
Construction				
Ornithology	Black Grouse - Temporary displacement during construction	Extension of the Bird Disturbance Management Plan (BDMP) to include targeted pre-construction surveys for black grouse and protection of lek sites and specific construction control measures to minimise lek disturbance for any leks within 750m of the Proposed Development.	BDMP and Ecological Clerks of Work (ECoW).	Not significant
	Golden eagle merlin, red kite and curlew - Temporary displacement during construction	None required	N/A	Not significant
Ecology	Blanket Bog and Wet Modified Bog - Direct and indirect habitat loss	Good practice measures as defined within the CEMP shall be implemented, including the appointment of an ECoW, site briefings, noise mitigation, an Environmental Risk Management Plan, a Water Quality and Fish Monitoring Plan, Ecological Protection Plans, Habitat Protection Plans and Species Protection Plans. In addition to all mitigation, the implementation of a BEMP (OBEMP provided in TA 7.6 (EIAR Volume 4) which includes bog and upland habitat restoration.	CEMP to be submitted for the written approval of Stirling Council (SC), Perth and Kinross Council (PKC), Scottish Environment Protection Agency (SEPA) and NatureScot prior to construction commencing. An Outline CEMP is provided in **TA 2.1 (EIAR Volume 4).** The Biodiversity Enhancement Management Plan (BEMP) will be agreed with Perth and Kinross Council (PKC) in consultation with NatureScot prior to the commencement of construction of the Proposed Development. An Outline BEMP is provided in **TA 7.7 (EIAR Volume 4).**	Not significant
Geology, Peat, Hydrology and Hydrogeology	Degradation of peat and carbon rich soils.	No additional mitigation required. Good practice measures as defined within the CEMP shall be implemented, including the appointment of an ECoW, site briefings, an Environmental Risk Management Plan, Water pollution prevention measures, peat and soil storage drainage, access track drainage, Water Quality Monitoring Plan, Ecological Protection Plans, soil storage and management, borrow pit reinstatement, vegetation regeneration and reinstatement monitoring.	CEMP to be submitted for the written approval of SC, PKC, SEPA and NatureScot prior to construction commencing. An Outline CEMP is provided in **TA 2.1 (EIAR Volume 4**). Geotechnical Risk Register. Implementation of Peat Management Plan (PMP). An Outline PMP is provided in **TA 8.2 (EIAR Volume 4).**	Not significant
	Reduced surface water runoff contribution to water dependent habitats, including M32 springs, leading to habitat loss.	Measures such as permeable access tracks and regular cross track drains, have been proposed to safeguard existing surface water flow paths and maintain existing water quality. Good practice measures as defined within the CEMP shall be implemented, including the appointment of an ECoW, site briefings, an Environmental Risk Management Plan, water pollution prevention measures, peat and soil storage drainage, access track drainage, Water Quality Monitoring Plan, Ecological Protection Plans, soil storage and management, borrow pit reinstatement, vegetation regeneration and reinstatement monitoring.	CEMP to be submitted for the written approval of SC, PKC, SEPA and NatureScot prior to construction commencing. An Outline CEMP is provided in **TA 2.1 (EIAR Volume 4**). Ecological / Environmental Clerk of Works (ECoW) will ensure existing surface water flow paths and water flushes are identified and preserved by installing suitable cross track drainage during construction.	Not significant
	Generation of pollution impairing surface water, groundwater, habitat and water supplies.	No additional mitigation required. Good practice measures as defined within the CEMP shall be implemented, including the appointment of an ECoW, site briefings, an Environmental Risk Management Plan, pollution prevention and mitigation, water pollution prevention measures, peat and soil storage drainage, access track drainage, Water Quality Monitoring Plan, Ecological Protection Plans, soil storage and management, borrow pit reinstatement, vegetation regeneration and reinstatement monitoring.	CEMP to be submitted for the written approval of SC, PKC, SEPA and NatureScot prior to construction commencing. An Outline CEMP is provided in **TA 2.1 (EIAR Volume 4**). Confirmatory water quality monitoring the scope and frequency of which will be agreed with Scottish Water, SEPA, SC, PKC and Marine Scotland prior to construction commencing.	Not significant

Topic	Potential Effect	Mitigation Proposed (embedded and additional)	Means of Implementation	Residual Effect
	Erosion and sedimentation impairing surface water, groundwater, habitat and water supplies.	No additional mitigation required. Good practice measures as defined within the CEMP shall be implemented, including the appointment of an ECoW, site briefings, an Environmental Risk Management Plan, pollution prevention and mitigation, Ecological Protection Plans, Species Protection Plans, water pollution prevention measures, discharge or water, permit to pump, clean water diversion, access track drainage, works within the water environment authorisations, Private Water Supplies protection and contingency of supply, abstraction authorisation and watercourse crossings authorisations.	CEMP to be submitted for the written approval of SC, PKC, SEPA and NatureScot prior to construction commencing. An Outline CEMP is provided in **TA 2.1 (EIAR Volume 4).**	Not significant
	Drainage and dewatering impairing surface water, groundwater, habitat and water supplies.	No additional mitigation required. Good practice measures as defined within the CEMP shall be implemented, including the appointment of an ECoW, site briefings, an Environmental Risk Management Plan, pollution prevention and mitigation, Ecological Protection Plans, Species Protection Plans, water pollution prevention measures, discharge or water, permit to pump, clean water diversion, access track drainage, works within the water environment authorisations, Private Water Supplies protection and contingency of supply, abstraction authorisation and watercourse crossings authorisations.	CEMP to be submitted for the written approval of SC, PKC, SEPA and NatureScot prior to construction commencing. An Outline CEMP is provided in **TA 2.1 (EIAR Volume 4**).	Not significant
	Flood risk.	No additional mitigation required. Good practice measures as defined within the CEMP shall be implemented, including an Environmental Risk Management Plan, site briefings, pollution prevention and mitigation, water pollution prevention measures, discharge or water, permit to pump, clean water diversion, access track drainage, works within the water environment authorisations, Private Water Supplies protection and contingency of supply, abstraction authorisation and watercourse crossings authorisations.	Commitment to deploy Sustainable Drainage Systems (SuDS) and prepare a detailed drainage design as part of the final CEMP. An Outline CEMP is provided in **TA 2.1 (EIAR Volume 4**).	Not significant
	Private water supplies and Drinking Water Protection Areas (DWPAs).	No additional mitigation required. Good practice measures as defined within the CEMP shall be implemented, including an Environmental Risk Management Plan, site briefings, pollution prevention and mitigation, water pollution prevention measures, discharge or water, permit to pump, clean water diversion, access track drainage, Water Quality Monitoring Plan, works within the water environment authorisations, Private Water Supplies protection and contingency of supply, abstraction authorisation and watercourse crossings authorisations.	CEMP to be submitted for the written approval of SC, PKC, SEPA and NatureScot prior to construction commencing. An Outline CEMP is provided in **TA 2.1 (EIAR Volume 4**). Confirmatory water quality monitoring the scope and frequency of which will be agreed with Scottish Water, SEPA, SC, PKC and Marine Scotland prior to construction commencing.	Not significant
Noise	Noise from construction activities at noise sensitive receptors.	Best practicable means to minimise noise impacts, although the relevant noise limits are predicted to be met.	The CEMP will set out how construction noise effects will be minimised during the construction phase of the development. An Outline CEMP is provided in **TA 2.1 (EIAR Volume 4**).	Not significant
Cultural Heritage	Direct adverse effect on head-dyke (21), which is crossed by the proposed access track.	Archaeological watching brief to be carried out during any ground-breaking works.	Archaeological condition attached to planning consent.	Not significant
	Potential direct adverse effect on sheepfold (1), which lies within the micrositing allowance.	Mark off and avoid during construction. Archaeological watching brief to be carried out during any ground-breaking works.	Carried out by main contractor as directed by Archaeological Clerk of Works (ACoW).	Not significant
	Potential direct effect on Ardveich township (2), which lies within the micrositing allowance.	Mark off structural elements (2c-r) and avoid during construction.	Archaeological condition attached to planning consent.	Not significant

Topic	Potential Effect	Mitigation Proposed (embedded and additional)	Means of Implementation	Residual Effect
		Archaeological watching brief to be carried out during any ground-breaking works in the vicinity.		
	Potential direct effect on building (4), which lies within the micrositing allowance.	Mark off avoid during construction. Archaeological watching brief to be carried out during any ground-breaking works	Carried out by main contractor as directed by ACoW.	Not significant
	Potential direct effect on possible robbed cairn (7), which lies within the micrositing allowance.	Mark off avoid during construction.	Carried out by main contractor as directed by ACoW.	Not significant
	Potential direct effect on cup-marked rock (23), which lies within the micrositing allowance.	Mark off avoid during construction.	Carried out by main contractor as directed by ACoW.	Not significant
	Potential direct effect shieling (47), which lies within the micrositing allowance.	Mark off avoid during construction.	Carried out by main contractor as directed by ACoW.	Not significant
	Potential direct effect shieling (50), which lies within the micrositing allowance.	Mark off avoid during construction.	Carried out by main contractor as directed by ACoW.	Not significant
	Potential direct effect shieling (61p-q), which lies within the micrositing allowance.	Mark off avoid during construction. Archaeological watching brief to be carried out during any ground-breaking works.	Carried out by main contractor as directed by ACoW.	Not significant
	Potential direct effect shieling (70a and 70f), which lies within the micrositing allowance.	Mark off avoid during construction. Archaeological watching brief to be carried out during any ground-breaking works.	Carried out by main contractor as directed by ACoW.	Not significant
	Potential adverse effects on hitherto undiscovered buried archaeology.	Archaeological watching brief to be carried out during any ground-breaking works in designated areas.	Archaeological condition attached to planning consent.	Not significant
Traffic and Transport	A85 Users at the Site access – Large Loads	Abnormal Invisible Loads (AIL) Traffic Management Plan (TMP) proposals	Via a condition of consent. AIL TMP to be agreed with PKC and Transport Scotland (TS) prior to movement of AILs.	Minor (Not significant)
	A84 Users south of Lochearnhead – Large Loads	AIL TMP proposals	Via a condition of consent. AIL TMP to be agreed with PKC and TS prior to movement of AILs.	Minor (Not significant)
	Drummond Estate Boat Hire / jetty / camping area – Road Safety	Construction Traffic Management Plan (CTMP) and Recreation and Outdoor Access Plan (ROAP) proposals	Via a condition of consent. CTMP and ROAP to be agreed with PKC and TS prior to construction activities commencing. A Draft ROAP is provided in **TA 12.2 (EIAR Volume 4).**	Minor (Not significant)
	Drummond Estate Boat Hire / jetty / camping area – Large Loads	AIL TMP proposals	Via a condition of consent. AIL TMP to be agreed with PKC and TS prior to movement of AILs.	Minor (Not significant)
	Lochearnhead and Auchraw – Road Safety	CTMP and ROAP proposals	Via a condition of consent. CTMP and ROAP to be agreed with PKC and TS prior to construction activities commencing.	Minor (Not significant)
	Lochearnhead and Auchraw – Large Loads	AIL TMP proposals	Via a condition of consent. AIL TMP to be agreed with PKC and TS prior to movement of AILs.	Minor (Not significant)
	Core Path / Path Users within the Site – Severance	CTMP and ROAP proposals	Via a condition of consent. CTMP and ROAP to be agreed with PKC and TS prior to construction activities commencing.	Minor (Not significant)
	Core Path / Path Users within the Site – Pedestrian Delay	CTMP and ROAP proposals	Via a condition of consent. CTMP and ROAP to be agreed with PKC and TS prior to construction activities commencing.	Minor (Not significant)

Topic	Potential Effect	Mitigation Proposed (embedded and additional)	Means of Implementation	Residual Effect
	Core Path / Path Users within the Site – Non-motorised User Amenity	CTMP and ROAP proposals	Via a condition of consent. CTMP and ROAP to be agreed with PKC and TS prior to construction activities commencing.	Minor (Not significant)
	Core Path / Path Users within the Site – Fear and Intimidation	CTMP and ROAP proposals	Via a condition of consent. CTMP and ROAP to be agreed with PKC and TS prior to construction activities commencing.	Minor (Not significant)
	Core Path / Path Users within the Site – Road Safety	CTMP and ROAP proposals	Via a condition of consent. CTMP and ROAP to be agreed with PKC and TS prior to construction activities commencing.	Minor (Not significant)
	Core Path / Path Users within the Site – Large Loads	AIL TMP proposals	Via a condition of consent. AIL TMP to be agreed with PKC and TS prior to movement of AILs.	Minor (Not significant)
Aviation	Potential impact on military low flying and civilian Emergency Helicopter Support Unit (EHSU) operations	Embedded mitigation as outlined in **Chapter 13: Aviation (EIAR Volume 1)** (Implementation of Lighting Plan (LP); site details included on aeronautical charts; temporary obstacles more than 91.4 m alerted to aircrews by Notice to Aviation (NOTAM)).	Secured through suspensive planning conditions.	Not significant.
Socio-economics, Recreation and Tourism	£9.2 million GVA and 135 years of employment in Perth and Kinross and Stirling (beneficial)	N/A (beneficial effect)	N/A	Not significant
	£32.6 million GVA and 522 years of employment in Perth and Kinross and Stirling (beneficial)	N/A (beneficial effect)	N/A	Not significant
	Effects on Local tourism economy	No additional mitigation required.	N/A	Not significant
	Effect on recreational walks and core paths	No additional mitigation required.	N/A	Not significant
	Effect on accommodation providers (beneficial)	N/A (beneficial effect)	N/A	Not significant
	Effect on visitor attractions	No additional mitigation required.	N/A	Not significant
Operation				
Landscape and Visual	*Landscape Character Types (LCT)*			
	LCT 147 (ii) – Summits and Plateaux – Central (Beinn Leabhainn) – within 5 km	The proposed turbine layout has been designed to minimise the effect on the surrounding landscape and visual resource. Therefore, the turbine layout design has evolved with the intention and key objective of presenting a simple, well-balanced image of the Proposed Development in the majority of views and the reduction of turbine visibility within lower lying straths and glens.	N/A	Major significant
	LCT 376 (ii) – Summits & Plateaux – Tayside (Ben Chonzie/Sron Mhor/Meall nam Fuaran) – within 5 km		N/A	Major significant
	LCT 371 (ii) – Mid Upland Glens (Glen Lednock)		N/A	Major-moderate significant
	LCT 251 (ii) – Highland Summits (Ben More/Ben Vorlich) – within 5-10 km		N/A	Moderate significant
	LCT 376 (iii) – Summits & Plateaux – Tayside (Ben Lawers and Beinn Heasgarnich) – within 5-10 km		N/A	Moderate significant
	LCT 376 (ii) – Summits & Plateaux – Tayside (Ben Chonzie/Sron Mhor/Meall nam Fuaran) – within 5-10 km		N/A	Moderate significant
	Landscape Designations			
	Creag Gharch Local Landscape Area (LLA)		N/A	Major significant

Topic	Potential Effect	Mitigation Proposed (embedded and additional)	Means of Implementation	Residual Effect
	Loch Rannoch	The proposed turbine layout has been designed to minimise the effect on the surrounding landscape and visual resource. Therefore, the turbine layout design has evolved with the intention and key objective of presenting a simple, well-balanced image of the Proposed Development in the majority of views and the reduction of turbine visibility within lower lying straths and glens.	N/A	Major-moderate significant
	Glen Lyon NSA Special Landscape Quality (SLQ)12		N/A	Major-moderate significant
	Loch Lomond and The Trossachs National Park (LLTNP) SLQ2		N/A	Moderate significant
	LLTNP SLQ9		N/A	Moderate significant
	Visual Effects			
	Recreational receptors at Viewpoint 1	The proposed turbine layout has been designed to minimise the effect on the surrounding landscape and visual resource. Therefore, the turbine layout design has evolved with the intention and key objective of presenting a simple, well-balanced image of the Proposed Development in the majority of views and the reduction of turbine visibility within lower lying straths and glens.	N/A	Major significant
	Recreational receptors at Viewpoints 2, 6, 7, 8 and20.		N/A	Major-moderate significant
Ornithology	Black grouse - Permanent displacement during operation	Extension of the BDMP to the operational phase with specific mitigation detailed to ensure black grouse using leks along the access track are protected/disturbance to this lek by operational access to the wind farm is avoided.	Operational phase BDMP via condition of consent.	Not significant
	Golden eagle, merlin, red kits and curlew - Permanent displacement during operation	None required	N/A	Not significant
	All Important Ornithological Features (IOFs) - Mortality as a result of collision with turbines	Carcass removal (deer/sheep) to reduce the risk of golden eagle or red kite collisions from scavenging. Fence marking to reduce black grouse collision risk. Marking of wires/guy-lines associated with met masts etc. to reduce bird collision risk.	Through the finalisation of the Proposed Developments BEMP and discharge of suitably worded planning condition.	Not significant
Ecology	Blanket Bog & Wet Modified Bog - Habitat improvement	Implementation of a BEMP (OBEMP provided in **TA 7.6** (**EIAR Volume 4)** which includes bog and upland habitat restoration.	Implementation of a BEMP secured by planning condition. An Outline BEMP provided in **Technical Appendix 7.7** (**EIAR Volume 4)**	Not significant
	Bats (high-risk collision species/genus: common pipistrelle, soprano pipistrelle, *Nyctalus* spp.) - Injury / mortality	The standard mitigation described in **Section 7.5** of **Chapter 7: Ecology (EIAR Volume 1) and Technical Appendix 7.3** (**EIAR Volume 4).**	Monitoring measures to be undertaken following completion of construction works, by a suitably qualified ecologist.	Not significant
Geology, Peat, Hydrology and Hydrogeology	Generation of pollution impairing surface water, groundwater, habitat and water supplies.	No additional mitigation required. Good practice measures as defined within the Operational Environmental Management shall be implemented.	Appropriate storage and handling of potential pollutants in accordance with Controlled Activity Regulations (CAR) authorisations.	Not significant
	Erosion and sedimentation impairing surface water, groundwater, habitat and water supplies.	No additional mitigation required. Good practice measures as defined within the Operational Environmental Management shall be implemented.	Appropriate drainage design that incorporates sediment management measures, including sediment traps, to attenuate and treat runoff. Adopted through a long-term operational drainage and monitoring programme.	Not significant
	Drainage and dewatering impairing surface water, groundwater, habitat and water supplies.	No additional mitigation required. Good practice measures as defined within the Operational Environmental Management shall be implemented.	Good practice measures adopted through a long term operational drainage and monitoring programme.	Not significant

Topic	Potential Effect	Mitigation Proposed (embedded and additional)	Means of Implementation	Residual Effect
	Flood risk.	No additional mitigation required. Good practice measures as defined within the Operational Environmental Management shall be implemented.	Inspection of the operational drainage system and compliance with the attenuated rate of runoff agreed with SC and PKC at the detailed design stage. Removal of blockages from watercourse crossings in the unlikely event of occurrence.	Not significant
	Private water supplies and DWPAs.	No additional mitigation required. Good practice measures as defined within the Operational Environmental Management shall be implemented.	Good practice measures adopted through a long term operational monitoring programme.	Not significant
Noise	Operational noise from the substation and Battery and Energy Storage Systems (BESS) at noise sensitive receptors.	No specific mitigation required.	N/A	Not significant
	Operational noise from the Wind Turbine Generators (WTGs) at noise sensitive receptors.	No specific mitigation required.	N/A	Not significant
Aviation	Potential impact on National Air Traffic Services (NATS) Lowther Hill Air Traffic Control (ATC) Radar.	Additional mitigation to be agreed with NATS (Multi-Radar Tracker (MRT) blanking).	Secured through suspensive planning condition.	Not significant
Socio-economics, Recreation and Tourism	£0.8 million Gross Value Added (GVA) and 8 jobs in Perth and Kinross and Stirling	N/A (beneficial effect)	N/A	Not significant
	£1.6 million GVA and 19 jobs in Scotland.	N/A (beneficial effect)	N/A	Not significant
	£372,000 annual community benefit payments	N/A (beneficial effect)	N/A	Not significant
	Payment of non-domestic rates	N/A (beneficial effect)	N/A	Not significant
	Effect on local tourism economy	No additional mitigation required.	N/A	Not significant
	Effect on recreational walks and core paths	No additional mitigation required.	N/A	Not significant
	Effect on accommodation providers	N/A (beneficial effect)	N/A	Not significant
	Effect on visitor attractions	No additional mitigation required.	N/A	Not significant
Telecommunications and Television	Isolated Interference	Direct the receiving aerial to an alternative transmitter that covers the area; Replace receiving aerial with a more directional, or higher gain aerial; Reposition the receiving aerial; Upgrade antenna cabling and connections; Install signal amplifiers; • Replace terrestrial reception equipment with satellite or cable reception equipment; and • Receive television services via the internet.	N/A	Not significant