

14. Proposed Mitigation & Residual Effects

14.1. Introduction

14.1.1. This chapter provides a summary of the design interventions, mitigation measures and residual effects identified in the preceding sections of this Statement.

14.2. Methodology

14.2.1. Mitigation and enhancement opportunities have been identified through the design process with the objective of minimising environmental effects and maximising beneficial effects. In the context of this Statement, mitigation and enhancement includes matters of:

- Avoidance – measures to avoid adverse effects;
- Reduction – measures to reduce adverse effects; and
- Compensation – measures to offset significant residual effects.

14.2.2. Within the technical chapters of this Statement, a range of design measures have been identified to avoid and reduce adverse impacts. Where necessary, such design interventions are supplemented by further mitigation measures during both the construction and operational phases to ameliorate any outstanding adverse impact. Finally, contribution may also be directed towards the provision of financial contributions may also be proposed to compensate for significant adverse effects.

14.2.3. Utilising the data provided within the technical assessments (chapters 5-13), this Chapter provides a summary of the mitigation measures proposed, see Table 14.1 below.

Table 14.1 – Summary of mitigation measures

Topic / or receptor	Mitigation measures	Designed into the Proposed Development	Delivery via condition (outline/RM)	Delivery via legal obligation	Paragraph reference in the ES	Proposed Monitoring Arrangement
Construction Phase	Standard mitigation measures detailed in IAQM Construction	No	Yes	No	Section 6.6.	Daily monitoring recommended, to be determined by contractor with

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Topic / or receptor	Mitigation measures	Designed into the Proposed Development	Delivery via condition (outline/RM)	Delivery via legal obligation	Paragraph reference in the ES	Proposed Monitoring Arrangement
	Guidance for high risk sites					consultation with local authority
Operational Phase	Application of good design and good practice measures	Yes	No	No	Section 6.6.	None
Construction Noise	BPM and control measures	N/A	Yes	N/A	Section 7.5.8	Noise monitoring as a control measure may be undertaken subject to requirements in the CEMP
Existing noise affecting the new development	Noise bund/barrier screening for plots adjacent the M4 Motorway	Yes	No	N/A	Section 7.4.3	N/A
Existing noise affecting the new development	Acoustic glazing and ventilation specification for new dwellings	No	Yes	N/A	Section 7.6.2	N/A
Operational road traffic noise	N/A	N/A	N/A	N/A	Section 7.5.22	N/A
Pollution Hazards	CEMP	Yes – SuDS should be constructed	Yes		9.5.4	To be monitored by Site workers

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Topic / or receptor	Mitigation measures	Designed into the Proposed Development	Delivery via condition (outline/RM)	Delivery via legal obligation	Paragraph reference in the ES	Proposed Monitoring Arrangement
during Construction		prior to development				throughout construction
Site Compound	To be secure with adequate security	No	No	CDM Regulations 2015	9.5.12	Site compound to be monitored by Site Manager and Contractors through the construction phase
Piling for Foundations	CEMP	No	No	No	9.5.13	To be monitored by Site workers throughout construction
De-watering, Overpumping and Excavations	CEMP	No	No		9.5.14	To be monitored by Site workers throughout construction
Surface Water Runoff	Proposed SuDS Design	Yes – SuDS proposed	Yes	Suds Approval Body (SAB) Approval required	9.5.17	Operation, management and maintenance plan required through SAB process.
Foul Drainage	Proposed foul drainage design and required network upgrades	Yes – Foul drainage network proposed. Liaison ongoing with DCWW.	Yes	Yes	9.5.18	N/A
Crymlyn Bog SAC/SSSI/	CEMP	Yes	Yes		Section 10.62 and 10.63	Site to be monitored by construction personnel during construction. Operation,

Topic / or receptor	Mitigation measures	Designed into the Proposed Development	Delivery via condition (outline/RM)	Delivery via legal obligation	Paragraph reference in the ES	Proposed Monitoring Arrangement
Ramsar, Pant-y-Sais SSSI					see also separate iHRA	management and maintenance plan required through SAB process.
Crymlyn Bog SAC/SSSI/ Ramsar, Pant-y-Sais SSSI	Proposed SuDS design	Yes	Yes		Section 10.62 and 10.63 see also separate iHRA	Site to be monitored by construction personnel during construction. Operation, management and maintenance plan required through SAB process.
Crymlyn Bog SAC/SSSI/ Ramsar, Pant-y-Sais SSSI	Proposed foul drainage strategy	Yes	Yes		Section 10.62 and 10.63 see also separate iHRA	Site to be monitored by construction personnel during construction. Operation, management and maintenance plan required through SAB process.
Crymlyn Burrows SSSI	Dedicated green infrastructure design and habitat creation and management. Provision of CEMP and LEMP	No	Yes (LEMP/ CEMP)		Section 10.6.9 to 10.6.11	Construction monitoring by site personnel and ECoW. Long term monitoring to be secured in LEMP and undertaken by adopted management body.

Topic / or receptor	Mitigation measures	Designed into the Proposed Development	Delivery via condition (outline/RM)	Delivery via legal obligation	Paragraph reference in the ES	Proposed Monitoring Arrangement
Non-statutory designated sites.	CEMP/LEMP	No	Yes		Section 10.6.14 to 10.6.24	Construction monitoring by site personnel and ECoW. Long term monitoring to be secured in LEMP and undertaken by adopted management body.
Compacted Clay Soils with a Mosaic of Recolonising Vegetation	Dedicated green infrastructure design and, habitat creation and management. Provision of CEMP and LEMP	No	Yes		Section 10.6.28 to 10.6.36	Construction monitoring by site personnel and ECoW. Long term monitoring to be secured in LEMP and undertaken by adopted management body.
Wet Grassland and Mixed Scrub	Dedicated green infrastructure design and, habitat creation and management. Provision of CEMP and LEMP	No	Yes		Section 10.6.38 to 10.6.40	Construction monitoring by site personnel and ECoW. Long term monitoring to be secured in LEMP and undertaken by adopted management body.
Secondary Woodland	Dedicated Green Infrastructure design and, habitat creation	No	Yes		Section 10.6.42 to 10.6.46	Construction monitoring by site personnel and ECoW.

Topic / or receptor	Mitigation measures	Designed into the Proposed Development	Delivery via condition (outline/RM)	Delivery via legal obligation	Paragraph reference in the ES	Proposed Monitoring Arrangement
	and management. Provision of CEMP and LEMP					Long term monitoring to be secured in LEMP and undertaken by adopted management body.
Dense and Scattered Scrub	Dedicated green infrastructure design and, habitat creation and management. Provision of CEMP and LEMP	No	Yes		Section 10.6.48	Construction monitoring by site personnel and ECoW. Long term monitoring to be secured in LEMP and undertaken by adopted management body.
Waterbodies / Ponds	Dedicated Green Infrastructure design and, habitat creation and management. Provision of CEMP and LEMP	No	Yes		Section 10.6.50 to 10.6.52	Construction monitoring by site personnel and ECoW. Long term monitoring to be secured in LEMP and undertaken by adopted management body.
Ditches	Dedicated Green Infrastructure design and, habitat creation and management. Provision of	No	Yes		Section 10.6.54 to 10.6.55	Construction monitoring by site personnel and ECoW. Long term monitoring to be secured in LEMP and undertaken by

Topic / or receptor	Mitigation measures	Designed into the Proposed Development	Delivery via condition (outline/RM)	Delivery via legal obligation	Paragraph reference in the ES	Proposed Monitoring Arrangement
	CEMP and LEMP					adopted management body.
Rush Pasture	Dedicated Green Infrastructure design and, habitat creation and management. Provision of CEMP and LEMP	No	Yes		Section 10.6.57	Construction monitoring by site personnel and ECoW. Long term monitoring to be secured in LEMP and undertaken by adopted management body.
Railway Embankment	Dedicated green infrastructure design and, habitat creation and management. Provision of CEMP and LEMP	No	Yes		Section 10.6.61 to 10.6.62	Construction monitoring by site personnel and ECoW. Long term monitoring to be secured in LEMP and undertaken by adopted management body.
Tree Belts / Lines	Dedicated green infrastructure design and, habitat creation and management. Provision of CEMP and LEMP	No	Yes		Section 10.6.64 to 10.6.66	Construction monitoring by site personnel and ECoW. Long term monitoring to be secured in LEMP and undertaken by adopted management body.

Topic / or receptor	Mitigation measures	Designed into the Proposed Development	Delivery via condition (outline/RM)	Delivery via legal obligation	Paragraph reference in the ES	Proposed Monitoring Arrangement
Open Mosaic Habitat	Dedicated green infrastructure design and, habitat creation and management. Provision of CEMP and LEMP	No	Yes		Section 10.6.75 to 10.6.76	Construction monitoring by site personnel and ECoW. Long term monitoring to be secured in LEMP and undertaken by adopted management body.
Badger	Construction safeguards within CEMP. Dedicated Green Infrastructure design and, habitat creation and management. Provision of LEMP.	No	Yes		Section 10.6.78 to 10.6.84	Construction monitoring by site personnel and ECoW. Long term habitat monitoring to be secured in LEMP and undertaken by adopted management body.
Bats	Construction safeguards within CEMP. Precautionary approach to tree felling. Dedicated Green Infrastructure design and, habitat creation	No	Yes		Section 10.6.86 to 10.6.100	Construction monitoring by site personnel/ecological oversight of relevant activities by ECoW. Long term habitat monitoring to be secured in LEMP and undertaken by adopted management body.

Topic / or receptor	Mitigation measures	Designed into the Proposed Development	Delivery via condition (outline/RM)	Delivery via legal obligation	Paragraph reference in the ES	Proposed Monitoring Arrangement
	and management. Provision of LEMP.					
Reptiles	Construction safeguards within CEMP. Dedicated green infrastructure design and, habitat creation and management. Provision of LEMP.	No	Yes		Section 10.6.102 to 10.6.110	Construction monitoring by site personnel/ecological oversight of relevant activities by ECoW. Long term habitat monitoring to be secured in LEMP and undertaken by adopted management body.
Wintering Birds	Construction safeguards within CEMP. Dedicated Green Infrastructure design and, habitat creation and management. Provision of LEMP.	No	Yes		Section 10.6.112 to 10.6.116	Construction monitoring by site personnel/ecological oversight of relevant activities by ECoW. Long term habitat monitoring to be secured in LEMP and undertaken by adopted management body.
Breeding Birds	Construction safeguards within CEMP.	No	Yes		Section 10.6.118 to 8.6.139	Construction monitoring by site personnel/ecological

Topic / or receptor	Mitigation measures	Designed into the Proposed Development	Delivery via condition (outline/RM)	Delivery via legal obligation	Paragraph reference in the ES	Proposed Monitoring Arrangement
	Precautionary approach to habitat clearance. Dedicated green infrastructure design and, habitat creation and management. Provision of LEMP.					oversight of relevant activities by ECoW. Long term habitat monitoring to be secured in LEMP and undertaken by adopted management body.
Invertebrates	Construction safeguards within CEMP. Dedicated Green Infrastructure design and, habitat creation and management. Provision of LEMP.	No	Yes		Section 10.6.141 to 10.6.149	Construction monitoring by site personnel/ecological oversight of relevant activities by ECoW. Long term habitat monitoring to be secured in LEMP and undertaken by adopted management body.
Amphibians	Construction safeguards within CEMP. Dedicated green infrastructure design and, habitat creation	No	Yes	Yes. Requirement for certain works to proceed under GCN licence (Habitat	Section 10.6.150 to 10.6.163	Construction monitoring by site personnel/ecological oversight of relevant activities by ECoW. Long term habitat and species monitoring

Topic / or receptor	Mitigation measures	Designed into the Proposed Development	Delivery via condition (outline/RM)	Delivery via legal obligation	Paragraph reference in the ES	Proposed Monitoring Arrangement
	and management. Provision of LEMP. NRW licence(s) to be secured in due course.			Regulations 2017)		to be secured in LEMP (and NRW licences) and undertaken by adopted management body.
Otter and Water Vole	Pre-commencement surveys prior to works commencing. Dedicated green infrastructure design and, habitat creation and management. Provision of LEMP.	No	Yes		Section 10.6.165 to 10.6.166	Construction monitoring by site personnel. Long term habitat monitoring to be secured in LEMP and undertaken by adopted management body.
Other Species	Construction safeguards within CEMP. Dedicated green infrastructure design and, habitat creation and management.	No	Yes		Section 10.6.168 to 10.6.172	Construction monitoring by site personnel. Long term habitat monitoring to be secured in LEMP and undertaken by adopted management body.

Topic / receptor	or Mitigation measures	Designed into the Proposed Development	Delivery condition (outline/RM)	Delivery via legal obligation	Delivery via Paragraph reference in the ES	Proposed Monitoring Arrangement
	Provision of LEMP.					

14.3. Residual Effects

- 14.3.1. Following the implementation of the mitigation measures identified above, the residual impacts arising from the Proposed Development have been determined. Table x provides a summary of the residual effects expected. Please refer to the individual chapters (5-13) for a more detailed description of the impact identified.

Table 14.2 Summary Residual Impacts

Topic	Residual Impact
Transport & Travel	The assessment has identified that all effects from the Proposed Development are considered to be negligible.
Air Quality	Any adverse effects resulting from the construction works would be minimised such that there would not be any significant residual effect on the existing residential receptors. The operational assessment has shown that the effect on air quality at existing receptors is not expected to be significant.
Noise	There would be no residual temporary or permanent adverse significant effects associated with the Proposed Development
Soils, Hydrogeology & Ground Conditions	Residual permanent effects of minor adverse significance are predicted on geology. Physical effects range from temporary minor adverse to permanent minor beneficial. Permanent effects of neutral significance are generally anticipated during operation, however permanent effects of moderate beneficial significance are anticipated in relation to soil erosion and compaction. Temporary effects of minor adverse to neutral significance are predicted during construction in relation to contamination.

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Topic	Residual Impact
	Permanent effects associated with contamination ranging from moderate beneficial to neutral significance.
Water & Flood Risk	Any impacts likely to arise as part of the construction and operational phase will be negligible or neutral.
Biodiversity	There are predicted to be no adverse residual effects associated with the Proposed Development with most of the identified habitats and species predicted to have a minor positive residual impact.
Landscape & Visual Impact	Any impacts likely to arise as part of the Proposed Development will be neutral or positive.
Climate Change	The Proposed Development will result in an increase of greenhouse gas emissions which will have a significant adverse impact
Socio-Economics	Residual impacts are either minor positive or negligible.