

## **10 SCHEDULE OF MITIGATION AND RESIDUAL EFFECTS**

### **10.1 Introduction**

- 10.1.1 The purpose of this chapter is to summarise the mitigation measures proposed in each of the technical chapters (4-9) to avoid, reduce, or offset impacts which would otherwise give rise to significant residual environmental effects.
- 10.1.2 The main aim of the design process was to 'design out' potential for environmental effects as far as possible. This chapter does not summarise 'mitigation by design'.
- 10.1.3 Prior to, and during construction the Contractor would be required to draft and implement an Environmental Management Plan (EMP), to be agreed with the relevant authorities prior to any works commencing; which would deliver the mitigation measures proposed here, as well as wider mitigation outwith those topics covered in this EAIR, for example transport and waste. Further detail on specific mitigation measures to be included in an EMP are contained within each of the technical chapters, where relevant.

### **10.2 Summary of Mitigation and Residual Effects**

- 10.2.1 The predicted effects and mitigation measures have been compiled into Tables 10.1 and 10.2. They are presented in the order in which they appear within this EIA Report.
- Landscape and Visual;
  - Cultural Heritage and Archaeology;
  - Road Drainage and Water Environment;
  - Ecology and Nature Conservation;
  - Air Quality; and
  - Noise.

**Table 10.1: Summary of Mitigation and Residual Effects (Construction Phase)**

Topic	Potential Significant Effect (without Mitigation)	Mitigation Measures	Result	Timing	Residual Effect
Landscape and Visual (Chapter 4)	Direct and permanent loss of vegetation cover that would alter the landscape fabric of the site.	Mitigation that would be adopted during site preparation and construction process and included within the adopted Environment Management Plan (EMP) and include:	Amelioration of construction impacts which would also assist in the assimilation of the proposed development within the adjoining landscape.	Pre- and during Construction.	Locally moderate (significant) in the short-term, but moderate/minor adverse overall and not significant.
	Adverse effects upon landscape character of WLLC LCU 22: West Lothian Coastal Farmlands.	<ul style="list-style-type: none"> <li>Site compounds and accommodation works (including any site offices and welfare facilities) would be restricted in size and duration and will be removed during final construction works and the ground reinstated at the earliest juncture.</li> </ul>			Temporary moderate/minor adverse and not significant.
	Adverse effects upon landscape character of WLLC LCU 23: West Lothian Farmlands.	<ul style="list-style-type: none"> <li>Soils would be stored and handled using best practice to ensure that the quality of soil is maintained.</li> </ul>			Temporary minor adverse and not significant.
	Adverse effects upon landscape character of LTH7: Coastal Margins.	<ul style="list-style-type: none"> <li>Tidy site principles would be adopted, and all construction related waste would be disposed of off-site, at a suitable waste disposal facility.</li> </ul>			Temporary moderate/minor adverse and not significant.
	Adverse effects upon character or value of Forth Coast cSLA.	<ul style="list-style-type: none"> <li>Machinery and materials would be stored in designated compounds, any unwanted materials would be removed from site.</li> <li>Roads providing access to the site would be maintained free</li> </ul>			No effect.

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	Adverse effects upon character or value of Dundas cSLA.	<p>of dust and mud by a combination of regular road sweeping and dust suppressant methods.</p> <ul style="list-style-type: none"> <li>Construction lighting would be directed away from sensitive visual receptors, and only used during agreed working hours while construction activity is taking place. Lights would be turned off when the site is closed unless health and safety requirements dictate otherwise.</li> <li>Stockpiled materials or remaining waste would be removed from site and their position reinstated at the end of construction.</li> <li>The landscape plan would be implemented as soon as practicable during the construction phase to aid the rapid assimilation of the site into the adjoining landscape.</li> </ul>			No effect.
	Adverse effects upon the setting or amenity of settlement.				Temporary moderate/ minor adverse and not significant.
	Adverse effects upon the visual amenity of transportation routes.				Temporary minor adverse and not significant.
	Adverse effects upon the visual amenity of recreational routes.				Temporary moderate/ minor adverse and not significant.
Cultural Heritage and Archaeology (Chapter 5)	Direct effect on buried remains of former Duntarvie farmstead (11).	Geophysical survey and trial trench evaluation, followed by further mitigation if required by WLC. The appointed contractor will implement an EMP which will include a Written Scheme of Investigation.	Identification (and preservation) of any unknown buried heritage assets.	Pre-construction.	Minor adverse and not significant.
	Direct effect on other buried remains within the proposed development area	Geophysical survey and trial trench evaluation, followed by further mitigation if required by WLC.	Identification (and preservation) of any unknown	Pre-construction.	Minor adverse and not significant.

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		The appointed contractor will implement an EMP which will include a Written Scheme of Investigation.	buried heritage assets.		
Road Drainage and Water Environment (Chapter 6)	Increase in temporary flood risk.	<p>Limit period of exposure of bare surfaces and uncontrolled runoff from construction areas to minimise increase in runoff.</p> <p>Temporary drainage systems will alleviate localised flood risk and prevent obstruction of surface runoff pathways.</p> <p>Materials will be secured in the event of heavy rainfall to prevent their movement or release and will be stored in areas out with the floodplain where practicable.</p> <p>The appointed Contractor will implement an EMP and Construction Method Statements to be approved by SEPA prior to commencement of works.</p> <p>The appointed Contractor will sign up to SEPA's Floodline system to receive early warning flood updates.</p>	Minimise/prevent local flood risk.	Pre-construction and during construction.	Minor adverse and not significant.
	Sediment release and silt-laden runoff entering Swine Burn.	<p>Adherence to SEPA/CIRIA best practice guidance for silt and sediment control, including SEPA's GPPs.</p> <p>Suitable control measures for construction site runoff and sedimentation, such as silt fences and bunds.</p>	Minimise/prevent sediment release and silt-laden runoff.	Pre-construction and during construction.	Minor adverse and not significant.

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		<p>Obtain a CAR Construction Site Licence from SEPA and submit a Pollution Prevention Plan.</p> <p>Soil and material stockpiles will be bunded/covered as appropriate and located at least 10m from surface waters and drains.</p> <p>Temporary SuDS prior to outfall.</p> <p>Limit the extent of soil stripping as far as practical. Topsoiling/re-seeding will be undertaken as soon as possible after earthworks are completed.</p> <p>The appointed Contractor will implement an EMP and Construction Method Statements to be approved by SEPA prior to commencement of works.</p> <p>The Environmental Site Manager (or equivalent) to ensure that mitigation stated within the EMP is fully implemented.</p> <p>CAR licence applications will be prepared and will be approved by SEPA prior to commencement of works.</p>			
	Accidental release/spillage of oils, fuels and chemicals directly into the Swine Burn or contained within runoff.	<p>A plan for pollution control and emergency response procedures in line with GPP21 and GPP22.</p> <p>Adherence to SEPA/CIRIA best practice guidance for pollution control, including GPP5 and PPG6 for managing concrete operations near surface waters.</p>	Minimise/prevent spillages.	Pre-construction and during construction.	Minor adverse and not significant.

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Topic	Potential Significant Effect (without Mitigation)	Mitigation Measures	Result	Timing	Residual Effect
		<p>Storage and use of oils, fuel and chemicals will comply with CAR General Binding Rules.</p> <p>The appointed Contractor will implement an EMP and Construction Method Statements to be approved by SEPA prior to commencement of works.</p> <p>The Environmental Site Manager (or equivalent) to ensure that mitigation stated within the EMP is fully implemented.</p> <p>CAR licence applications will be prepared and will be approved by SEPA prior to commencement of works.</p>			
	<p>Insufficient temporary drainage provision.</p>	<p>Temporary SuDS prior to outfall.</p> <p>A pre-earthwork drainage (PED) ditch network will be constructed at toe of embankments and top of cuttings to collect and convey silt-laden runoff to temporary SuDS or clean runoff to surface waters.</p> <p>Sewage from site facilities will be disposed to foul sewer or agreed with SEPA and in accordance with GPP4.</p> <p>CAR licence applications will be prepared and will be approved by SEPA prior to commencement of works.</p> <p>Drainage design to account for provision.</p>	<p>Appropriate site drainage for proposed construction works.</p>	<p>Pre-earthworks and during construction.</p>	<p>Negligible and not significant.</p>

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Ecology and Nature Conservation (Chapter 7)	Disturbance of badger sett (if applicable).	Establish disturbance buffer area around setts OR exclusion of sett under SNH licence if required. Ecologists to mark out 30 m buffer from sett. Ecologists to exclude sett under SNH licence if required.	Minimise disturbance on existing badger setts.	Pre-construction.	Minor adverse and not significant.
	Badger collision with construction traffic.	Badger proof fencing to be installed along the base of the embankment which follows the east bound merge slip road and the B8020 heading north.	Prevent badgers crossing the M9 motorway, reducing fatalities.	Early construction.	No effect.
	Felling of trees causing injury/ death to roosting bats.	Soft felling to reduce risk of injury/death to roosting bats. Soft felling- limbs cut and left grounded over night to allow bats to escape Felling to be supervised by ecologist with bat licence under EcoW. Method statement prepared to detail action plan if bats are found during felling.	Prevent bats being injured from tree felling.	Early construction.	No effect.
	Lighting causing disturbance to foraging / commuting bats.	Lighting regime should be designed to be sympathetic to foraging and commuting bats (e.g. low-pressure sodium lights, directed away from woodland and hedgerows as per BCT guidance).	Minimise interference with bats.	Pre-construction.	No effect.
	Destruction of/disturbance to nesting birds during vegetation removal	If works occur within breeding bird season (Mar-Aug) then an ecologist will need to check vegetation for active birds nests prior to any removal. Removal of vegetation must occur within 48 hours of the nest check. Works will not be	Minimises/ prevents disturbance of nesting birds.	Pre-construction.	No effect.

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		permitted within 10 m of nests if nests are found. Clearance can only resume once chicks have safely fledged the nest (to be confirmed by ecologist).			
Air Quality (Chapter 8)	Dust emissions from demolition and construction activities.	Best practice dust mitigation measures (such as covering stockpiles to prevent wind whipping, switch off vehicle engines) set out as part of the EMP.	Minimise construction dust.	Construction.	Not significant.
	Traffic emissions from construction traffic.	Construction traffic management (e.g. efficient routing, switching off idle vehicles) as part of the EMP.	Minimising vehicle emissions.	Construction.	Not significant.
Noise (Chapter 9)	Construction noise affecting: Duntarvie Castle; The Myre Farm; and Niddry Mains House.	None.	N/A	N/A	Negligible adverse and not significant.

**Table 10.2: Summary of Mitigation and Residual Effects (Operational Phase)**

Topic	Potential Significant Effect (without mitigation)	Mitigation Measures	Result	Timing	Residual Effect
Landscape and Visual (Chapter 4)	Direct and permanent loss of vegetation cover that would alter the landscape fabric of the site.	Based on review of the proposals and of the potential landscape and visual effects, no additional mitigation measures are deemed to be required above the mitigation measures which are embedded within the scheme design, comprising: <ul style="list-style-type: none"> <li>Construction of junction to sit below existing threshold of the</li> </ul>	Integration of the proposed development as a settled component of the broader landscape. Reinforcement and enhancement of existing areas of woodland and	To be delivered as a component of the design of the proposed development.	No effect beyond that identified during construction phase.
	Adverse effects upon landscape character of WLLC LCU 22: West Lothian Coastal Farmlands.				Moderate/ minor adverse and not significant.
	Adverse effects upon landscape character of WLLC LCU 23: West Lothian Farmlands.				Moderate/ minor adverse and not significant.



**Table 10.2: Summary of Mitigation and Residual Effects (Operational Phase)**

Topic	Potential Significant Effect (without mitigation)	Mitigation Measures	Result	Timing	Residual Effect
	Adverse effects upon landscape character of LTH7: Coastal Margins.	<p>M9, preventing elements from extending beyond current skyline of transport infrastructure resulting in new features;</p> <ul style="list-style-type: none"> <li>▪ Creation of graded landforms consistent with existing topography in the area;</li> <li>▪ Establishment of locally appropriate landscape features (principally native tree and shrub planting) to reflect landscape structure of the wider landscape, reduce perceived scale and engineered form of the proposed development and enhance character and condition of existing field boundaries and trees in the vicinity of the site;</li> <li>▪ SUDs would be planted with appropriate wetland and marginal aquatic species to stabilise substrate and provide visual/ biodiversity interest; and</li> <li>▪ Species rich grassland would be sown across remainder of site to promote visual interest while enhancing biodiversity.</li> </ul>	<p>boundary planting found within the vicinity of the site. Predominantly native species specified to assist visual assimilation and augment biodiversity. Hedgerows, hedgerow trees and specimen tree planting specified to supplement structural woodland and reflect the characteristic field boundaries and trees in evidence throughout the study area.</p>		Moderate/ minor adverse and not significant.
	Adverse effects upon character or value of Forth Coast cSLA.				Minor adverse and not significant.
	Adverse effects upon character or value of Dundas cSLA.				Minor adverse and not significant.
	Adverse effects upon the setting or amenity of Winchburgh.				Minor adverse and not significant.
	Adverse effects upon the setting or amenity of scattered residential properties.				Moderate/ minor adverse and not significant.
	Adverse effects upon the visual amenity of transportation routes (M9, B8020 and Edinburgh and Glasgow railway).				Minor adverse and not significant.
	Adverse effects upon the visual amenity of Core Path WL2A (also the route of Forth & Clyde Canal, Union Canal Towpath and NCR754).				No effect.
	Adverse effects upon the visual amenity of Core Path WL11/ CEC10.				Minor adverse and not significant.
	Adverse effects upon the visual amenity of Viewpoint 1 - B9080 (M9 Overbridge) 530 m south east				Minor adverse and not significant.
	Adverse effects upon the visual amenity of Viewpoint 2 - B9080 – western approach to Winchburgh				Minor adverse and not significant.

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	Adverse effects upon the visual amenity of Viewpoint 3 - B8020 Beatlie Road				Moderate/ minor adverse and not significant.
	Adverse effects upon the visual amenity of Viewpoint 4 - Totlely Wells				Minor adverse and not significant.
	Adverse effects upon the visual amenity of Viewpoint 5 - Minor road between B8020 and Duntarvie				Minor adverse and not significant.
Cultural Heritage and Archaeology (Chapter 5)	Effect on setting of Duntarvie Castle.	None.	None.	N/A	Moderate adverse and significant.
Road Drainage and Water Environment (Chapter 6)	Beneficial changes in flood depths and extent with the proposed development in place.	The new access road culvert will fill in the low point in the Swine Burn channel where floodwaters previously spilled onto the floodplain, therefore containing a greater proportion of flows in-channel. Implementation of other mitigation including SuDS attenuation and best practice culvert design. CAR licence application will be prepared for the new culvert to be approved by SEPA prior to commencement of works.	Sustainable drainage systems incorporated.	Operation.	Minor beneficial and not significant.
	Sub-optimal performance of road drainage network, due to blockages and sediment build up.	Regular maintenance and inspection of road drainage network (including SuDS). Agreement with Transport Scotland and WLC required.	Regularly maintained road drainage network.	Operation.	Negligible and not significant.

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<b>Topic</b>	<b>Potential Significant Effect (without mitigation)</b>	<b>Mitigation Measures</b>	<b>Result</b>	<b>Timing</b>	<b>Residual Effect</b>
	Increase in likelihood of pollutant build up on road surfaces and risk of accidental spillages discharging to the Swine Burn and entering groundwater.	Permanent SuDS (2 levels) prior to outfall, as agreed with SEPA and in line with CIRIA guidance. HEWRAT outputs indicate routine runoff and spillage risk to Swine Burn is well within acceptable limits. SuDS basins are lined therefore preventing infiltration to groundwater. Agreement with SEPA and Transport Scotland and WLC required.	Minimise pollutant build up on road network.	Operation.	Negligible and not significant.
Ecology and Nature Conservation (Chapter 7)	Badger collision with traffic (due to increased flow).	Badger proof fencing to be installed (and maintained) to prevent badgers accessing high traffic areas.	Prevent badgers crossing the M9 motorway, reducing fatalities.	Operation.	No effect.
	Lighting causing disturbance to foraging / commuting bats.	Implication of bat friendly lighting regime during operation. Lighting should be designed to be sympathetic to foraging and commuting bats (e.g. low-pressure sodium lights, directed away from woodland and hedgerows as per BCT guidance).	Minimise interference with bats.	Operation.	No effect.
Air Quality (Chapter 8)	Traffic emissions from road vehicles.	None.	N/A	N/A	Not significant.
Noise (Chapter 9)	Increase in operational road traffic noise level along the M9 corridor and B8020 (Beatlie Road) affecting: Duntarvie Castle; The Myre Farm; and Niddry Mains House.	None.	N/A	N/A	Negligible to minor adverse and not significant.

### 10.3 Intra-cumulative effects

#### CONSTRUCTION

- 10.3.1 There will likely be a temporary cumulative effect on the local landscape and natural habitats within close proximity of the site through the disturbance of vegetation and soils, construction noise and emissions. However, these are typical of construction works of this nature and appropriate mitigation measures will be implemented through the EMP.
- 10.3.2 The cumulative effects would not be any more significant than the individual residual effect.

#### COMPLETE AND OPERATIONAL

- 10.3.3 During the operation of the proposed development, there is a likely combined impact on the Duntarvie Castle due to the change in the local landscape and minor increase in noise levels from vehicle users of the junction. However, the proposed development has been designed such that the junction would incorporate vegetation/planting to minimise the visual impact on the Castle's setting. Likewise, appropriate traffic measures (such as speed limits) would be implemented for the junction's slip roads which would help minimise vehicle noise related effects. Overall, the cumulative effect would not be any greater than the individual residual effects.
- 10.3.4 There is likely to be a combined impact on air quality and noise for junction users including NMUs and to the Castle during periods of peak road use. This however will only be temporary at times of peak use and the overall cumulative effect would not likely be significant.

### 10.4 Summary and Conclusions

- 10.4.1 The proposed development is crucial for the delivery of the Winchburgh Masterplan which cannot proceed beyond 1,000 residential units until implementation of the new M9 Junction, initiating allowing the total residential units to reach up to 3,450.
- 10.4.2 The site has been chosen based on its strategic location to motorway and will provide access to the wider area of development outlined in the Winchburgh Masterplan. The proposed development would be located at an appropriate distance from the existing Junction 1a (2.8 km south east) and Junction 2 (3.5 km north west) and incorporates the existing road network through the use of the B8020.
- 10.4.3 Although the proposed development would have significant adverse effects relating to Duntarvie Castle, the overall impact is likely to be beneficial as it would improve connections with the wider road network to other major settlements (e.g. Edinburgh) and allow the Winchburgh Masterplan to be implemented in full (increase of 2,450 from current allowance).