

## 5 CULTURAL HERITAGE AND ARCHAEOLOGY

### 5.1 Introduction

5.1.1 This chapter considers the potential effects on cultural heritage and archaeology (hereafter 'heritage assets') associated with the construction and operation of the proposed development, as described in Chapter 2: Proposed Development Description.

5.1.2 The specific objectives of the chapter are to:

- describe the cultural heritage and archaeology baseline;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the potential effects: direct effects, effects on setting and cumulative effects;
- describe the mitigation measures proposed to address likely significant effects; and
- assess the residual effects remaining following the implementation of mitigation.

5.1.3 The assessment has been carried out by George Mudie MA (Hons) FSA Scot MCIfA, a Senior Consultant with CFA Archaeology Ltd (CFA) – a Chartered Institute for Archaeologists (CIfA) Registered Organisation (RO) based in Musselburgh, East Lothian. Mr Mudie has over 18 years full-time experience of producing EIAs for commercial, industrial and renewable energy developments across the UK.

5.1.4 This chapter refers to the following Technical Appendices (refer to Volume 3):

- Technical Appendix 5.1: Gazetteer of Heritage Assets within the Study Area;
- Technical Appendix 5.2: Gazetteer of Archaeological Events within the Study Area; and
- Technical Appendix 5.3: Photo Plates.

5.1.5 This chapter refers to the following Figures (refer to Volume 4):

- Figure 5.1: Cultural Heritage Plan: Study Area; and
- Figure 5.2(a, b): Cultural Heritage Plans: Mitigation Areas.

### 5.2 Scope of Assessment

5.2.1 This chapter considers direct effects and effects on setting for:

- Scheduled Monuments and other archaeological features;
- Listed Buildings and other buildings of historic or architectural importance; and
- Historic Landscape Character.

5.2.2 There are no World Heritage Sites, Inventory status Gardens and Designed Landscapes and Conservation Areas within 500 m of the site boundary. The scope of the assessment described in the EIA Scoping Report<sup>1</sup> (refer to Technical Appendix 1.1: EIA Scoping Report in Volume 3) has been agreed by Historic Environment Scotland (HES). Beyond 500 m, the proposed development would not be a dominant new feature in the landscape and the effect on the settings of heritage assets beyond 500 m would not be significant.

5.2.3 The assessment is based on the proposed development as described in Chapter 2: Proposed Development Description. The assessment process follows the principles set out in DMRB

---

<sup>1</sup> Ramboll, 2018. Winchburgh M9 Junction – EIA Scoping Report. 22 June 2018 (amended 04 July).

Volume 11<sup>2</sup>, adapted to reflect the methodology set out in the Scottish Natural Heritage (SNH) and HES guidance on EIA<sup>3</sup>.

### **Scoping and Consultation**

- 5.2.4 As presented in Technical Appendix 1.2: EIA Scoping Opinion in Volume 3, comments were received from HES relating to Cultural Heritage and Archaeology. In summary, the comments were concerned with the potential impact on Duntarvie Castle, which is a Scheduled Monument (ref: SM1905) and a Category A Listed Building (ref: LB6422) that had been identified in the Scoping Report as the heritage asset most likely to have its setting affected by the proposed development.
- 5.2.5 HES were content to agree that, given the nature of the proposal and its proximity to the Castle, Duntarvie Castle is the heritage asset most likely to be impacted upon by the proposed development. HES therefore confirmed that the focus of the EIAR should be this asset. HES also confirmed that they were content with the proposed scope of assessment for sites within their remit, the approach to baseline data collection, prediction of environmental effects and the assessment of significance, as presented in the Scoping Report.

### **Potential Effects Scoped Out**

- 5.2.6 Assessment of effects of the proposed development on the settings of heritage assets with statutory or non-statutory designations, other than Duntarvie Castle, has been scoped out. Figure 5.1 in Volume 4 shows the locations of heritage assets with statutory or non-statutory designations within 500 m of the site boundary; the Union Canal Scheduled Monument (SM8954) is included for reference only.

## **5.3 Assessment Methodology**

### **Baseline Characterisation**

#### *Study Area*

- 5.3.1 A 'Study Area' extending to 500 m from the limit of the site boundary has been adopted for the assessment. HES have indicated through their scoping response that the setting of Duntarvie Castle is the important issue that needs to be addressed and they are also content with the proposed scope of assessment for heritage assets within their remit. All heritage assets derived from the West of Scotland Archaeology Service (WoSAS) Historic Environment Record (HER) and from the HES database within 500 m of the proposed development are included to provide context and to inform the assessment of the archaeological potential of the area which forms the site.
- 5.3.2 Figure 5.1 in Volume 4 shows the proposed development layout, the locations of heritage assets and the historic landscape character identified within the Study Area. The heritage assets are described in the gazetteer (Technical Appendix 5.1 in Volume 3). The Union Canal Scheduled Monument (SM8954) is included for reference and context.

#### *Desk Study / Field Survey*

- 5.3.3 The following information sources were consulted as part of the desk-based assessment work:

<sup>2</sup> Design Manual for Roads and Bridges (DMRB). <http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/index.htm>

<sup>3</sup> SNH & Historic Environment Scotland (2018) 'Environmental Impact Assessment Handbook'. Edinburgh

- HES Spatial Data Warehouse<sup>4</sup>: for up-to-date data on the locations and extents of Scheduled Monuments, Listed Buildings, Conservation Areas, Inventory status Garden and Designed Landscapes and Inventory status Historic Battlefields.
- West of Scotland Archaeology Service (WoSAS) Historic Environment Record (HER)<sup>5</sup>: provided a digital database extract in GIS for all assets within 1 kilometre (km) of the site.
- HES database (Canmore)<sup>6</sup>: for any information additional to that contained in the HER.
- Relevant bibliographic sources referenced in HER records and on-line historic research resources were consulted to provide background and historic information (including Micklejohn, 1798<sup>7</sup> and Irving, 1845<sup>8</sup>).
- Map Library of the National Library of Scotland<sup>9</sup>: for Ordnance Survey maps and other historical map resources.
- Historic Land-Use Assessment Data for Scotland (HLAMap)<sup>10</sup>: for information on the historic land use character of the site and the surrounding area.

5.3.4 Two site visits were undertaken on 18 August 2018 and on 27 February 2020 to assess the setting of Duntarvie Castle and the potential impact of the proposed development, and to acquire a photographic record of its character and setting. The site visit considered the influence of the existing M9 motorway on the setting of the Castle and views to, from and across the Castle.

#### ***Assessment of Effects***

5.3.5 The effects of the proposed development on heritage assets have been assessed on the basis of their type (i.e. direct effects, impacts on setting and cumulative effects) and nature (adverse or beneficial). The assessment considers the value/sensitivity of the heritage asset, and its setting, and the magnitude of the predicted impact.

- Adverse impacts are those that detract from or reduce cultural significance or special interest of heritage assets.
- Beneficial impacts are those that preserve, enhance or better reveal the cultural significance or special interest of heritage assets.

#### ***Sensitivity Criteria***

5.3.6 Cultural heritage assets are given weight through the designation process. Designation ensures that sites and places are recognised by law through the planning system and other regulatory processes. The level of protection and how a site or place is managed varies depending on the type of designation and its laws and policies (HES, 2019<sup>11</sup>). The assessment of sensitivity to change of cultural heritage assets reflects the HES 2019 guidance and takes into account the principles set out in the DMRB. Table 5.1 summarises the relative sensitivity

---

4 Historic Environment Scotland (HES), 2018. Spatial Data Warehouse [online]. Available at: <http://portal.historicenvironment.scot/spatialdownloads> (Accessed on 03/08/2018).

5 GIS data provided on 06/08/2018.

6 HES, 2018. Historic Environment Scotland database, Canmore [online]. Available at: <http://pastmap.org.uk/> (Accessed on 03/08/2018).

7 Micklejohn, H (1798) Abercorn, County of Linlithgow, Old Statistical Accounts of Scotland, Vol XX.

8 Irving, L (1845) Abercorn, County of Linlithgow, New Statistical Accounts of Scotland, Vol II.

9 National Library of Scotland, 2018. Map Images [online]. Available at: <https://maps.nls.uk> (Accessed on 03/08/2018).

10 HES, 2018. Historic Land-Use Assessment for Scotland (HLAMap) [online]. Available at: <http://hlapmap.org.uk/> (Accessed on 03/08/2018).

11 Historic Environment Scotland (2019) 'Designation Policy and Selection Guidance', Edinburgh.

of those heritage assets relevant to the proposed development (in this case, excluding World Heritage Sites and Marine Resources).

<b>Sensitivity of Asset</b>	<b>Definition / Criteria</b>
High	Assets valued at a national level, including: <ul style="list-style-type: none"> <li>▪ Scheduled Monuments and sites proposed for scheduling</li> <li>▪ Category A Listed Buildings</li> <li>▪ Gardens and Designed Landscapes (Inventory)</li> </ul>
Medium	Assets valued at a regional level, including: <ul style="list-style-type: none"> <li>▪ Archaeological sites and areas of distinctive regional importance</li> <li>▪ Category B Listed Buildings</li> <li>▪ Conservation Areas</li> <li>▪ Non-inventory designed landscapes (NIDL)</li> </ul>
Low	Assets valued at a local level, including: <ul style="list-style-type: none"> <li>▪ Archaeological sites and areas of local importance</li> <li>▪ Category C Listed Buildings</li> <li>▪ Unlisted buildings and townscapes with local (vernacular) characteristics</li> </ul>
Negligible	Assets of little or no intrinsic heritage value, including: <ul style="list-style-type: none"> <li>▪ Find-spots</li> <li>▪ Unlisted buildings or minor historic or architectural interest</li> <li>▪ Poorly preserved examples of particular types of features</li> </ul>

*Magnitude of Impact*

5.3.7 Table 5.2 presents the criteria for assessing the magnitude of an impact (adverse or beneficial), which measures the degree of change to the baseline character or setting of an asset that would result from construction and operation of the proposed development.

<b>Magnitude of Impact</b>	<b>Definition</b>	
	<b>Adverse</b>	<b>Beneficial</b>
High	Changes to the fabric or setting of a heritage asset resulting in the complete or near complete loss of the asset’s cultural significance. Changes that substantially detract from how a heritage asset is understood, appreciated and experienced.	Preservation of a heritage asset in situ where it would otherwise be completely or almost completely lost. Changes that appreciably enhance the cultural significance of a heritage asset and how it is understood, appreciated and experienced.
Medium	Changes to those elements of the fabric or setting of a heritage asset that contribute to its cultural significance such that this quality is appreciably altered. Changes that appreciably detract from how a heritage asset is understood, appreciated and experienced.	Changes to important elements of a heritage asset’s fabric or setting, resulting in its cultural significance being preserved (where this would otherwise be lost) or restored. Changes that improve the way in which the heritage asset is understood, appreciated and experienced.
Low	Changes to those elements of the fabric or setting of a heritage asset that contribute to its cultural significance such that this quality is slightly altered.	Changes that result in elements of a heritage asset’s fabric or setting detracting from its cultural significance being removed. Changes that result in a slight

12 Derived from SNH/HES (2018) 'Environmental Impact Assessment Handbook', Edinburgh.

**Table 5.2: Magnitude of Impact<sup>12</sup>**

Magnitude of Impact	Definition	
	Adverse	Beneficial
	Changes that slightly detract from how a heritage asset is understood, appreciated and experienced.	improvement in the way a heritage asset is understood, appreciated and experienced.
Negligible	Changes to fabric or setting of a heritage asset that leave its cultural significance unchanged and do not affect how it is understood, appreciated and experienced.	

*Significance Criteria*

5.3.8 The sensitivity of the asset (Table 5.1) and the magnitude of the predicted impact (change) (Table 5.2) are used to inform the professional judgment of the potential significance of the effect. Table 5.3 provides a matrix for determining the significance of an effect.

**Table 5.3: Matrix for Determining Level of Effect**

Magnitude of Impact	Sensitivity of Asset			
	High	Medium	Low	Negligible
High	Major	Major / Moderate	Moderate / Minor	Minor
Medium	Major / Moderate	Moderate	Minor	Minor / Negligible
Low	Moderate / Minor	Minor	Minor / Negligible	Minor / Negligible
Negligible	Minor	Minor / Negligible	Minor / Negligible	Negligible

5.3.9 For this assessment, 'Major' and 'Moderate' effects are considered to be 'significant' and 'Minor' or 'Negligible' effects are considered to be 'not significant'.

**5.4 Baseline Conditions**

***Current Baseline***

5.4.1 There are 10 heritage assets identified from the desk-based assessment that lie within the 500 m Study Area. The Union Canal Scheduled Monument (SM8954) lies just outside the Study Area but is included for context. Full descriptions of the individual assets are provided in Technical Appendix 5.1 (see Volume 3), which also includes an assessment of their sensitivity according to the parameters set out in Table 5.1.

*Prehistoric Period*

5.4.2 A large, double ditched enclosure (5)<sup>13</sup> had been identified to the north of Winchburgh as parchmarks on aerial photographs in 2007. In 2014 the site was investigated through an archaeological excavation (ref: Ev5430) in advance of the expansion of Winchburgh. The evidence from the fill of the inner ditch indicated that there had been stone wall or rampart inside the inner ditch and that the enclosure was in existence for only a relatively short duration. The enclosure was fully excavated and there are no surviving remains. Accordingly, the former enclosure is assessed as being of little or no heritage value and of negligible sensitivity.

*Post Medieval Period*

5.4.3 Duntarvie Castle (3) is the standing remains of a 16<sup>th</sup> century tower house that has been consolidated and partly restored, which is now used as an events venue (Plate 5.1 in Technical

<sup>13</sup> Bracketed numbers refer to the corresponding asset number in Technical Appendix 5.1 (TA5.1): Gazetteer of Heritage Assets within the Study Area.

Appendix 5.3 in Volume 3). It stands in an elevated position on the southern edge of an east-west aligned ridge, with open views to the south over the broad expanse of the Almond Valley landscape. The Castle stands within an enclosed area of ground that was formerly a small designed landscape (gardens and parkland), which is now much altered from the character that is depicted on the Ordnance Survey 1<sup>st</sup> edition map (1855) (see Figure 5.1 in Volume 4). The former enclosure now survives as little more than a relict tree lined boundary along its north, west and south sides on the west side of the B8020 (HLAMap), but there are surviving remains that include earthworks of paddocks, tracks and other buildings, some of which may be the remains of 17<sup>th</sup> century formal gardens. On its east side, the grounds of the Castle have been truncated by the current alignment of the B8020, which was re-aligned westwards early in the 20<sup>th</sup> century, and there are no visible remains of the original boundary in the arable field to the east of the road. Duntarvie Castle is a Scheduled Monument and Category A Listed Building and is valued at the national level and of high sensitivity.

- 5.4.4 To the north of Duntarvie Castle there was formerly a small farmstead (2) shown on the Ordnance Survey 1<sup>st</sup> edition map (1855)<sup>14</sup> but which may have had earlier origins. What may be the same farmstead appears on Roy's 'Military Survey of Scotland' map (1747-55)<sup>15</sup>. The farmstead no longer survives, and its former location is now an arable agricultural field. To the south east of Duntarvie Castle there was also formerly a farmsteading (11) which stood outside of the enclosed castle grounds on the opposite side of a road that led north from what is now Winchburgh. Examination of historic Ordnance Survey maps shows that the present road alignment was established sometime between 1897 and 1916. The farmsteading itself was demolished sometime between 1922 and 1951. Although there are no surviving visible remains of either the farmstead (2) or the farmsteading (11), it is possible that buried remains of the former buildings could survive below ground level in the current agricultural fields. Any surviving remains could hold archaeological information that could add to our knowledge of post-medieval farming and domestic life associated with the period of occupation of Duntarvie Castle (3). Accordingly, these two assets are assessed as being of value at the local level and of low sensitivity.
- 5.4.5 A small farm building at Niddry Mains (6) shown on the 1<sup>st</sup> edition Ordnance Survey (1855)<sup>16</sup> map no longer survives. The former site of the building has been modified through the creation of a turning bay at the head of the track to Niddry Mains Farm. Accordingly, the former farm building is assessed as being of little or no heritage value and of negligible sensitivity.
- 5.4.6 The Union Canal (4) passes just outside and to the southwest of the Study Area, to the south of the Edinburgh to Glasgow railway line. The canal is a Scheduled Monument (ref: SM8954) and is valued at the national level and of high sensitivity.
- 5.4.7 Winchburgh Quarry (9), now a recreational fishery (HLAMap), appears to have had a short period of use between 1897 and 1916 as it is not shown on the earlier Ordnance Survey map and appears as a disused quarry on the latter. The former quarry is assessed as being of little or no heritage value and of negligible sensitivity.

#### *Miscellaneous*

- 5.4.8 A number of possible cropmark sites (1, 7, 8 and 10) have been identified on aerial photographs within the Study Area. The records describe these as being linear features and

---

<sup>14</sup> Ordnance Survey 1st edition map (1855) (Linlithgowshire VI.3 (Abercorn)).

<sup>15</sup> Roy, W (1747-55) 'Military Survey of Scotland'.

<sup>16</sup> Ordnance Survey (1855) (Linlithgowshire VI.7 (Kirkliston)).

most likely to be former field boundaries. In one case (7), the cropmarks are thought possibly to be associated with quarrying. They do not appear to be representative of any buried archaeological remains of any importance and they are accordingly assessed as being of little or no heritage value and of negligible sensitivity.

#### ***Historic Landscape Character***

- 5.4.9 Examination of the HLAmap<sup>17</sup> indicates that the Study Area covers an area of 19<sup>th</sup> century enclosed rectilinear fields, within which are the remains of Duntarvie Castle (3) which can be traced back to the 16<sup>th</sup> century. Duntarvie Castle, which is depicted on Roy's 'Military Survey of Scotland' map (1747-55), originally stood within a small designed landscape, of which little survives today apart from a relict tree lined boundary.
- 5.4.10 No upstanding remains of earlier (prehistoric or medieval) settlement survive in the Study Area. However, several cropmarks, potentially of prehistoric remains, are visible on aerial photographs within arable farmland around Swineburn Wood which might suggest some earlier settlement of the area.
- 5.4.11 The current field pattern within the Study Area reflects that shown on the Ordnance Survey 1<sup>st</sup> edition map (1856) and indicates that the agricultural landscape within the Study Area has been relatively unmodified since the mid-19<sup>th</sup> century.
- 5.4.12 Alongside the agricultural landscape there are small pockets of managed woodland, recorded at Burn Craigs, Swineburn Wood and Lady Wood. These areas of woodland are shown on the Ordnance Survey 1<sup>st</sup> edition map and are likely to date to at least the early part of the 19<sup>th</sup> century, being utilised as a local source of wood, for fuel and building material.
- 5.4.13 The landscape within the Study Area has seen some minor modification during the late 19<sup>th</sup> and 20<sup>th</sup> centuries with the construction of the Edinburgh to Glasgow railway line, which cuts across the southern edge of the Study Area, the construction of the M9 motorway in the 1970s to the south of Duntarvie Castle and construction of modern housing just north of Winchburgh, at the southern edge of the Study Area.
- 5.4.14 Overall, it is considered that the historic landscape character of the Study Area is of value at the local level and of low sensitivity.

#### ***Future Baseline***

- 5.4.15 If the proposed development was not to go ahead, it is likely that there would be little or no change to the known heritage assets within the Study Area, provided that the present agricultural land-use were to continue. Normal farming activities would potentially have some continuing attritional influence on any buried remains that may be present as a consequence of regular ploughing in arable fields.

### **5.5 Assessment of Likely Effects**

#### ***Construction Effects***

- 5.5.1 Any ground-breaking works associated with construction of the proposed development, or activities resulting in ground disturbance, have the potential to disturb or destroy heritage assets including buried archaeological remains. Other activities, such as vehicle movements or the storage of construction materials within the site's working areas also have the potential to cause direct, adverse, permanent and irreversible effects on heritage assets.

---

<sup>17</sup> Historic Land-Use Assessment for Scotland (HLAMap) [online], available at: <http://hلامap.org.uk/> Accessed 27/02/2020



- 5.5.2 Based on the proposed layout of the M9 junction, which includes the creation of two new roundabouts, four slip roads and realignment of the B8020 to the north of the M9 motorway, construction effects are anticipated in respect of two of the identified heritage assets and the historic landscape character.
- 5.5.3 Realignment of the existing B8020, north of the northern roundabout, would intersect with the site of a former farmsteading (11) associated with Duntarvie Castle (3) (see Figure 5.2a in Volume 4). Although there are no surviving visible remains of the farmsteading, it is possible that buried remains survive below the ploughsoil level on the south eastern side of the current road alignment past the Castle. Groundworks and excavation for the construction of the new road alignment may encounter any buried remains that may be present. Any surviving remains could hold archaeological information that could add to our knowledge of farming and domestic life associated with the period of occupation of Duntarvie Castle (3). The Duntarvie farmstead (11) has been assessed as being of low sensitivity. Without mitigation, construction works are likely to have a high magnitude impact on any remains present, resulting in an effect of moderate adverse significance.
- 5.5.4 Construction of the west bound diverge road, on the south side of the M9 motorway, could directly affect a linear cropmark (8) that probably represents remains of a field boundary of post medieval date and which is assessed as being of negligible sensitivity. Construction of the new slip road and embankment is likely to result in only a low magnitude effect as it is unlikely that extensive excavation or ground works would be required. It is also probable that any groundworks that might be required would only affect a short section of the linear feature, close to the existing M9 motorway. Accordingly, it is assessed that a low magnitude impact, on remains of negligible sensitivity, would result in an effect of negligible significance.
- 5.5.5 Construction of the proposed development would result in modification to a small part of the 19<sup>th</sup> century fields which bound the existing M9 motorway and which form part of the local historic landscape character. The land take required for the proposed development would be small and overall the historic landscape character would remain unchanged and it would still be possible to appreciate the local historic landscape character of the area. Accordingly, it is assessed that the proposed development would have no more than a negligible magnitude impact on a historic landscape character of low sensitivity, resulting in an effect of negligible significance.

#### ***Operational Effects***

- 5.5.6 Through realignment of the existing B8020 from the north roundabout and past Duntarvie Castle, and creation of new motorway slip roads and construction of the north roundabout, the proposed development would give rise to a permanent change to the setting of Duntarvie Castle (3) during the operational phase.
- 5.5.7 The current outlook from the Castle towards the south is over open farm fields, partly screened by the relict tree line bordering the Castle grounds, to the motorway embankment and the bridge carrying the M9 motorway over the B8020 (Plate 5.2 in Technical Appendix 5.3 in Volume 3). Long distance views from the Castle extend to the south over low lying ground and a modern, settled and industrialised landscape as far as the Pentland Hills. These long-distance views, which will in due course include the completed Winchburgh Masterplan, would not be interrupted or restricted by the proposed development. The proposed development would be seen in the context of the existing modern motorway embankment in the foreground of that southerly view, between the Castle and the motorway embankment, resulting in an adverse change to the outlook of low magnitude.



- 5.5.8 From further north along the B8020, north east of Duntarvie Castle, the proposed northern roundabout and slip roads would be less obvious and would be partly screened by the existing topography (Plate 5.3 in Technical Appendix 5.3 in Volume 3). The effect on views of the Castle from the northern approach would be an adverse change of negligible magnitude, while the proposed B8020 road realignment would result in an adverse change to the view of Duntarvie Castle of low magnitude. When viewed from the motorway, travelling in either direction, the proposed development would also give rise to an adverse change in the view of Duntarvie Castle of low magnitude. When viewed from the south, on the approach to the Castle from Winchburgh, the Castle is seen in an elevated position beyond the motorway embankment (Plate 5.4 in Technical Appendix 5.3 in Volume 3) and the proposed development would give rise to an adverse change in this view of Duntarvie Castle of low magnitude.
- 5.5.9 Overall, it is assessed that, as a result of changes in its immediate surroundings, the effect of the proposed development on the setting of Duntarvie Castle, a Scheduled Monument and Category A Listed Building of high sensitivity, would be an adverse change of low magnitude, resulting in an effect of moderate adverse significance.
- 5.5.10 However, the predicted effect on the Castle's setting would not result in any diminution of its cultural significance, as a surviving and reasonably well-preserved Scots Renaissance villa of the early 17<sup>th</sup> century and a prominent historic building in the local landscape. Nor would the proposed development diminish the architectural qualities and historic associations that contribute to the building's special interest. Although significant, the predicted effect on the Castle's setting would not hinder the ability of any visitor to appreciate the character of the Castle or to appreciate and understand its relationship with its wider landscape.

## 5.6 Assessment of Cumulative Effects

### *Cumulative Construction Effects*

- 5.6.1 There are no other developments that are the subject of a valid planning application with which the proposed development would give rise to a cumulative direct effect (in combination or additively) on cultural heritage and archaeology.
- 5.6.2 Likewise, there are no intra-project cumulative effects associated with cultural heritage and archaeology during the construction phase.

### *Cumulative Operational Effects*

- 5.6.3 There are no other developments that are the subject of a valid planning application with which the proposed development would give rise to a cumulative effect (in combination or additively) on the settings of cultural heritage assets. Potential effects associated with development under the consented Winchburgh Masterplan have been considered as part of the future baseline in this assessment.
- 5.6.4 Likewise, there are no intra-project cumulative effects associated with cultural heritage and archaeology during the operational phase.

## 5.7 Mitigation

- 5.7.1 Planning Advice Note 1/2013: Environmental Impact Assessment (PAN1/2013)<sup>18</sup> and DMRB guidance describe mitigation as a hierarchy of measures: avoidance and prevention, reduction, compensatory/remediation (offset) measures. Avoidance, prevention and reduction

---

<sup>18</sup> Scottish Government, 2013. Planning Advice Note (PAN) 1/2013: Environmental Impact Assessment.

measures can be achieved through design, whilst compensatory/remediation measures offset impacts that have not been prevented or reduced.

- 5.7.2 The emphasis in Planning Advice Note (PAN) 2/2011: Planning and Archaeology (PAN2)<sup>19</sup> is for the preservation of important remains *in situ* where practicable and by record where preservation is not possible. The mitigation measures presented below therefore consider this planning guidance and provide various options for protection or recording and ensuring that, where practical, surviving assets are preserved intact to retain the present historic elements of the landscape.
- 5.7.3 All mitigation works presented in the following paragraphs would take place prior to or, where appropriate, during the construction of the proposed development. All works would be conducted by a suitably qualified archaeologist, and the scope of works would be detailed in one or more Written Scheme(s) of Investigation (WSI) developed in consultation with (and subject to the agreement of) WoSAS on behalf of West Lothian Council (WLC) and Transport Scotland.

#### **Mitigation prior to Construction**

##### *Geophysical survey*

- 5.7.4 A 100 % magnetometry survey would be carried out of all level agricultural land that is located below and alongside the M9 motorway embankment and within the site boundary (Figure 5.2(a,b): Mitigation Areas). The survey would aim to identify the presence or absence of potential archaeological deposits and to investigate the site of the former farmstead (11) to establish whether or not buried remains of the former buildings survive.

##### *Trial trench evaluation*

- 5.7.5 Following the magnetometry survey, a programme of trial trench evaluation would be undertaken to investigate any potential archaeological remains identified during the magnetometry survey. Trial trench evaluation would cover an 8 % sample<sup>20</sup> of the agricultural land below the M9 motorway embankment and within the site boundary.

#### **Mitigation during Construction**

- 5.7.6 Dependent upon the results of the initial geophysical and trial trench evaluation investigations, further mitigation may be required to more fully investigate and record the surviving remains. Any further works would be agreed in advance with WLC and Transport Scotland and the agreed proposals set out in a WSI to be carried out prior to or during the construction phase as appropriate.
- 5.7.7 All archaeological works would be conducted by suitably qualified archaeologist ('Archaeological Clerk of Works'). The mitigation would include the consequent production of written reports on the findings of the archaeological work conducted, with post-excavation analyses, publication and archiving of the results of the work where appropriate.

#### **Mitigation during Operation**

- 5.7.8 The proposed development would give rise to a moderately significant effect on the setting of Duntarvie Castle (3), including cumulatively with the Winchburgh Masterplan, for which there is no practical mitigation.

---

<sup>19</sup> Scottish Government, 2011. Planning Advice Note (PAN) 2/2011: Planning and Archaeology.

<sup>20</sup> 8% is typically required by WoSAS but the figure may vary dependent upon the results of the geophysical survey and prior consultation.

## 5.8 Assessment of Residual Effects

### *Residual Construction Effects*

- 5.8.1 The completion of the programme of archaeological mitigation works set out above would offset the loss of any archaeological remains that may occur as a result of the construction of the proposed development. Taking into account the mitigation that would ensure preservation by record of the archaeological resource and the dissemination of archaeological knowledge, the residual effect on Duntarvie farmstead (3) and other potential buried remains that may survive within the development area would be direct and of minor adverse significance and not significant.

### *Residual Operational Effects*

- 5.8.2 As there are no practical measures to avoid or reduce the effect of the proposed development, there would be a residual operational effect of moderate adverse (significant) significance on the setting of Duntarvie Castle (3). The residual effect would not, however, result in any diminution of the Castle's cultural significance or special interest.

### *Residual Cumulative Effects*

#### *Construction*

- 5.8.3 The proposed development would not result in any residual cumulative construction effects in relation to cultural heritage and archaeology.

#### *Operational*

- 5.8.4 The proposed development would not result in any residual cumulative operational effects in relation to cultural heritage and archaeology.

## 5.9 Summary

- 5.9.1 This chapter described the results of a desk-based assessment of the site and its wider surroundings and assesses the effects of the proposed development on cultural heritage and archaeology.
- 5.9.2 A description of the character and sensitivity of the cultural heritage baseline is provided for the 'Study Area' extending to 500 m around the site. Ten heritage assets have been identified within the 500 m Study Area, ranging in character from cropmarks of former field boundaries, of negligible sensitivity, to standing building remains of a castle of 16<sup>th</sup> century date, of high sensitivity. The Union Canal (SM8954) passes to the southwest of the site, and just outside the Study Area.
- 5.9.3 The potential direct effects of the proposed development on cultural heritage, archaeology and the historic landscape have been assessed and one potentially significant effect has been identified. Mitigation measures (geophysical survey and trial trench evaluation) to establish the presence or absence of potential archaeological deposits or remains within the development area have been set out. Dependent upon the results of the initial investigations, further mitigation may be required to more fully investigate and record the surviving remains to a standard acceptable to WLC and Transport Scotland. Implementation of the programme of mitigation would ensure that residual effects on cultural heritage and archaeology would be not significant.
- 5.9.4 A significant effect on the setting of Duntarvie Castle is predicted, as a result of the construction of the northern roundabout and realignment of the B8020 in the immediate

surroundings of the Castle. There is no practical mitigation that would avoid or reduce the effect and the residual effect is accordingly also assessed as being of moderate adverse significance. However, the effect on the Castle’s setting would not result in any diminution of its cultural significance and the proposed development would not hinder the ability of any visitor to appreciate the character of the Castle or to appreciate and understand its relationship with its wider landscape.

- 5.9.5 No cumulative effects, either direct effects arising from construction or effects on the settings of heritage assets, would result from the proposed development.
- 5.9.6 Table 5.4 provides a summary of the anticipated residual effects associated with cultural heritage and archaeology that are likely to arise as a result of the proposed development.

<b>Table 5.4: Summary of Residual Effects</b>				
<b>Likely Significant Effect</b>	<b>Mitigation</b>	<b>Means of Implementation</b>	<b>Residual Effect</b>	<b>Outcome</b>
<b>Construction</b>				
Direct effect on buried remains of former Duntarvie farmstead (11)	Geophysical survey and trial trench evaluation, followed by further mitigation if required by Council	The appointed contractor will implement an EMP which will include a Written Scheme of Investigation	Minor adverse	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 Council	The appointed contractor will implement an EMP which will include a Written Scheme of Investigation	Minor adverse	Not significant
<b>Operation</b>				
Effect on setting of Duntarvie Castle	None	None	Moderate adverse	Significant