

19. Cumulative Assessment

This chapter considers the potential for cumulative impacts of the Proposed Scheme (Type 1) on a single receptor, and those of the Proposed Scheme in combination with other 'reasonably foreseeable' developments (Type 2). To consider the potential of cumulative impacts on a single receptor/resource, a review was undertaken of the topic-area environmental assessments as reported in Chapters 8 to 18 of this Environmental Statement (ES).

No additional significant cumulative impacts are expected during the construction period. Following mitigation, it is anticipated that any potentially significant adverse construction impacts are unlikely to arise and any that do would be short-term in nature.

The Type 1 impact assessment identified the potential for minor adverse cumulative impacts during operation on Sheriffhall House due to the identified landscape, noise, land take impacts along with a proposed alteration of the properties access. This minor effect is considered to reflect effects that are locally significant. A minor beneficial effect was identified for CEC-4 core path due to the new non-motorised user (NMU) provision being provided as part of the Proposed Scheme and improved noise impacts on the route. No other significant cumulative impacts were identified.

The Type 2 impact assessment of the Proposed Scheme in combination with other 'reasonably foreseeable' included developments with planning permission, planning applications, sites allocated for economic and residential development, and other EIA developments. This assessment showed a moderate adverse effect due to the loss of prime agricultural land within the study area as a result of the Proposed Scheme and multiple other 'reasonably foreseeable' developments. The Proposed Scheme and the A7 Urbanisation Scheme will have a combined minor beneficial effect on the amenity of off-road NMU routes on both sides of the A7 South.

19.1 Introduction

19.1.1 This chapter presents the assessment of cumulative impacts associated with the Proposed Scheme, which is described in detail in Chapter 5 - The Proposed Scheme.

19.1.2 The assessment reported in this chapter considers two forms of cumulative impact comprising:

1. Combinations of impacts which have been identified as part of this Environmental Statement (ES); or
2. Impacts which in combination with impacts associated with other "reasonably foreseeable" developments.

19.1.3 The assessments as reported in Chapters 8 to 18 have, where relevant, already taken into account the potential for cumulative impacts within a specific topic assessment as a result of a number of different activities affecting a single receptor. This cumulative impact assessment does not consider cumulative in-topic impacts.

19.2 Approach and Methodology

Approach

19.2.1 European Commission (EC) guidelines (European Communities, 1999) define 'cumulative impacts' as follows: *"Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project"* (Pg. iii). This chapter therefore includes consideration of both the impacts of the Proposed Scheme on receptors, and the impacts of other 'reasonably foreseeable' projects in line with the EC guidelines.

19.2.2 Based on the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 2, Part 4 LA 104 'Environmental assessment and monitoring' guidance (Highways Agency et al., 2019), the cumulative assessment shall assess cumulative effects which include those from:

- Type 1: *"a single project (e.g. numerous different effects impacting a single receptor)"*; and,

- Type 2: “different projects (together with the project being assessed)” (Pg. 17).

- 19.2.3 The guidance provided in DMRB has been primarily used to inform the approach to this assessment; however, other relevant guidance has been drawn on where appropriate.
- 19.2.4 The Scottish Government’s Planning Advice Note (PAN) 1/2013 ‘Environmental Impact Assessment’ states “*The assessment of cumulative impacts provides an important opportunity to consider and address the impacts of development as a whole and is likely to be facilitated by effective co-ordination of specialist inputs*” (2017, pg.18).
- 19.2.5 Although not specific to Scotland, useful guidance has been prepared by The Planning Inspectorate in England, Advice Note 17 ‘Cumulative effects assessment relevant to Nationally Significant Infrastructure Projects’. This advice note details an approach to assessing cumulative effects of infrastructure projects and has therefore been referenced here as a useful tool to guide the approach to the assessment.
- 19.2.6 Due to the scale of the project a 1km study area has been established. This study area can be regarded as the Zone of Influence of the Proposed Scheme together with other projects as defined by LA 104 (The Highways Agency, et al., 2019). LA 104 superseded DMRB, Volume 11, Section 2, Part 5 ‘Assessment and Management of Environmental Effects’ (HA 205/08) (The Highways Agency, et al., 2008) which provided detailed guidance on the criteria for assessing the significance of cumulative effects and as no specific guidance has been provided in LA104 this has been utilised in this assessment.

Significance Criteria

- 19.2.7 The following criteria have been used to determine the significance of Type 1 and Type 2 cumulative effects as detailed in Table 19-1 ‘Determining Significance of Cumulative Effects’ below.

Table 19-1 Determining Significance of Cumulative Effects

Significance	Criteria of Cumulative Effects
Severe	Effects that the decision-maker must take into account as the receptor/resource is irretrievably compromised.
Major	Effects that may become a key decision-making issue.
Moderate	Effects that are unlikely to become issues on whether the project design should be selected, but where future work may be needed to improve on current performance.
Minor	Effects that are locally significant.
Not Significant	Effects that are beyond the current forecasting ability or are within the ability of the resource to absorb such damage.

Source: DMRB Volume 11, Section 2, Part 5, Chapter 2, Table 2.6 (The Highways Agency, et al., 2008)

Assessing Type 1 Cumulative Impacts

Reviewing Residual Impacts

- 19.2.8 To consider the potential for a combined effect of different environmental topic-specific impacts on a single receptor/resource, a review was undertaken of the topic-area environmental assessments as reported in Chapters 8 to 18 of this ES.
- 19.2.9 While all impacts as a result of the Proposed Scheme have been included, the assessment pays particular attention to the impacts summarised in Chapter 21 - Summary of Significant Residual Effects, which are those that are expected to remain as significant after application of any proposed mitigation, as these generally have the greatest potential to contribute to a significant cumulative impact. It is possible to have multiple significant residual impacts

(as reported in the ES chapters for each environmental parameter) which in combination do not constitute an additional significant (cumulative) impact.

Consideration of the Cumulative Residual Impacts of the Proposed Scheme on a Receptor

- 19.2.10 Consideration was then given to the potential for resultant combined effects during the construction and/or operation of the Proposed Scheme.
- 19.2.11 The relevant residual impacts were then grouped together under each applicable topic, and the potential for combined effects upon the receptors was assessed. The cumulative effects were assessed against the significance criteria outlined in Table 19-1 'Determining Significance of Cumulative Effects' and professional judgement was used to determine whether or not the effects were considered to be significant.

Assessing Type 2 Cumulative Impacts

Identification of 'Reasonably Foreseeable' Developments

- 19.2.12 Taking into account guidance provided within LA104 projects which have the potential to result in cumulative impacts include the following development which can be considered 'reasonably foreseeable', including:
- road projects which have been confirmed for delivery over a similar timeframe;
 - other development projects with valid planning permissions or consent orders, and for which EIA is a requirement (incl. projects that are 'reasonably foreseeable'; and,
 - proposals in adopted development plans with a clear identified programme for delivery.
- 19.2.13 Committed developments are considered to be projects with valid planning permissions within the period 22 November 2016 to 22 November 2019 (i.e. within a three-year implementation timeframe, and for which a formal EIA is a requirement or for which non-statutory EIA has been requested by the determining local authority to support the planning application).
- 19.2.14 There are no confirmed trunk road or motorway projects within the defined 1 km study area.
- 19.2.15 Due to the location of the Proposed Scheme within the East Edinburgh Wedge Expansion Area, an area of significant designated housing and employment development land, the study area was defined as an area of 1km around the Proposed Scheme. This study area was agreed with Midlothian Council (MLC) and was extended from 500m at their request. In addition, it was also agreed given the context of future development planned for this area it would be prudent to include Local Development Plan (LDP) allocations in the assessment. Although there is no certainty on the delivery of these future LDP allocations, given the proximity to the Proposed Scheme and the extent of development aspirations, the cumulative assessment would be more robust for including these potential developments. Therefore, strategic housing and economic land allocations have been included in the assessment. Engagement was undertaken with City of Edinburgh Council to seek to agree developments to be included in the assessment, no response was received, however all developments within the 1km study area are within the MLC area.
- 19.2.16 The overall list of 'other development projects and proposals in adopted development plans' was prepared jointly with the transport planners responsible for developing the traffic model. Therefore, the predicted traffic flows associated with the other developments and allocations identified have been included in the traffic flow predictions. The predicted traffic flows were used in the noise, air quality, water, and people and communities assessments and, as such, these assessments are inherently cumulative.

19.2.17 Professional judgement was used to 'scope out' any developments that were not considered likely to have in combination significant cumulative impacts. This allowed the assessment to focus on those that may potentially result in significant cumulative impacts in combinations with the Proposed Scheme. This assessment was carried out based on a review of all the findings of this ES and available information regarding other committed developments.

Consideration of the Cumulative Impacts of the Proposed Scheme and other Developments on a Receptor

19.2.18 A systematic, topic by topic assessment was then carried out to consider the potential Type 2 cumulative impacts. Due to a lack of public information on some of these developments a high-level assessment was carried out. Professional judgement and Table 19-1 'Determining Significance of Cumulative Effects' above were used in conjunction to determine whether or not the effects were considered to be significant.

19.2.19 The overall list of other development and allocations was compared with those included in the traffic flow predictions. As the traffic forecast already includes the contribution from the 'Reasonably Foreseeable' developments, this cumulative impact has already assessed as part of the air quality, noise and other studies which take account of changes to traffic flow.

19.3 Potential Cumulative Impacts

19.3.1 As discussed in Paragraph 19.2.15, a radial study area of 1km was agreed in consultation with MLC.

Designated Sites of Ecological Importance

19.3.2 There are no designated sites of ecological importance within the 1km study area. However, potential for cumulative impacts in the context of Dalkeith Oakwood Site of Special Scientific Interest (SSSI), the Firth of Forth Special Protection Area (SPA), Ramsar and SSSI, and Dalkeith Estate Local Biodiversity Site (LBS) have been considered in Chapter 9 - Nature Conservation, Chapter 12 – Noise and Vibration, Chapter 13 – Air Quality and Chapter 16 – Geology and Soils. These assessments have shown that there will be no impacts on these sites and therefore no significant cumulative impacts are anticipated.

Limitations to the Assessment

19.3.3 It should be noted the information used to inform the assessment was correct as of 22 November 2019.

19.3.4 It is likely that the Proposed Scheme will be procured by means of a Design and Build (D&B) type contract. Under the terms of this contract type, the Contractor will undertake both the detailed design and construction of the Proposed Scheme

19.3.5 It is expected that the construction work would take place within the Scheme Extents as shown on Figure 1.2 'The Proposed Scheme'. The Scheme Extents have informed the land take calculations undertaken for assessment purposes in this ES. The land within the Scheme Extents will be purchased under a Compulsory Purchase Order (CPO).

19.3.6 It is possible that the Contractor may require construction compounds to be located out with land identified in the CPO. Should construction compounds be located out with the Scheme Extents it will be the responsibility of the Contractor to assess the environmental impacts of the construction compounds and seek to mitigate these where possible.

19.3.7 The construction assessment is based on the construction information that is currently available, with advice being provided by the Highway Design Team. As with all construction assessments, the exact details of construction

activities would not be fully known before a specific contractor is appointed to complete the works who would determine their exact construction methods and programme during the detailed design stage.

- 19.3.8 As the Proposed Scheme is developed at detailed design any refinements to the design should be subject to environmental review to ensure that the residual effects would not be greater (or significantly different) than those reported in this ES. The findings of any such review should be subject to approval by Transport Scotland (TS) and where necessary opinions should be sought from the statutory bodies.

Type 1 Cumulative Impacts

- 19.3.9 The following paragraphs relate to potential combinations of environmental topic area impacts on specific areas/receptors. The assessments as reported in Chapters 8 to 18 of the ES have the potential for a number of construction or operational impacts on the same receptor was considered where appropriate and is therefore not repeated here.
- 19.3.10 As shown below, a long list of receptors has been identified. Those receptors that have the greatest potential for overall Type 1 cumulative impacts and are highlighted in bold below and will be assessed as part of this chapter. The other receptors were scoped out based the level of impacts already identified as part of the assessments with this ES.

Residential Receptors

- **Summerside Residences**
- **Campend Residences**
- **Old Sheriffhall Farmhouse**
- **Sheriffhall House**
- **Sheriffhall Mains Residences**
- **Melville Cottages**
- **Melville Grange Cottages**

Business Receptors

- Campend Businesses
- **Shawfair Business Park Extension Site (Ec1)**
- Sheriffhall South (e32)
- Todhills/Drum Farm Business Park
- Agricultural Land Owned by:
 - Landowner A
 - Landowner B & O
 - Landowner C
 - Landowner D & E
 - Landowner H & K
 - Landowner J
 - Landowner L & R
 - **Landowner P**

Community Receptors

- **Core Path CEC-4**
- Core Path 4-34
- Core Path 4-8
- Lasswade to Shawfair (Orbital) Shared Path
- Dalkeith Country Park

- 19.3.11 The receptors assessed (shown in bold above) are shown on Figure 19.1 'Cumulative Development – Receptors' and Other Developments. Please refer to Figure 15.1 'Community and Private Assets' and Figure 15.2 'Land Ownership' for details on the other receptors listed.

Construction

- 19.3.12 Chapter 5 – The Proposed Scheme provides information regarding the programming of the construction period and the types of activities anticipated as part of the construction. The precise details will be further dictated by the Contractors detailed design and construction methodology. A Construction Environmental Management Plan (CEMP), as set out in Chapter 20 - Schedule of Environmental Commitments, will be used to facilitate the implementation of mitigation to reduce temporary construction disturbance on single receptors.
- 19.3.13 Following mitigation, it is anticipated that any potentially significant adverse construction impacts are unlikely to arise and any that do would be short-term in nature.
- 19.3.14 Considering the above, residual impacts identified in this ES are not, in combination, considered to constitute an additional cumulative significant impact on any receptor during construction.

Operation

19.3.15 The review of the findings of each topic area identified a number of receptors that would be subject to a range of residual impacts that, in combination, could potentially contribute to a Type 1 cumulative impact during operation of the Proposed Scheme.

19.3.16 Each of the receptors potentially affected by cumulative impacts during operation has been summarised and assessed in Table 19-2 'Type 1 Cumulative Operational Impacts' below.

Table 19-2 Type 1 Cumulative Operational Impacts

Receptor	Description of Residual Impacts	Cumulative Effect
Residential Receptors		
Summerside Residences	<ul style="list-style-type: none"> Slight adverse visual effects at Year 1 and Year 15 of operation (See Chapter 8 – Landscape and Visual Effects). Slight adverse effect on setting of Summerside Farmhouse and outbuildings (LB14186) (See Chapter 10 – Cultural Heritage) Slight adverse effect to noise levels (See Chapter 12 – Noise and Vibration) Small improvement to air quality (See Chapter 13 – Air Quality). Slight adverse effect to due to permanent alteration of the residential accesses (See Chapter 15 – People and Communities: Community and Private Assets, and Human Health) 	Not Significant
Campend Residences	<ul style="list-style-type: none"> Slight adverse visual effect at Year 1 of operation (See Chapter 8 – Landscape and Visual Effects). Slight adverse effect to noise levels (See Chapter 12 – Noise and Vibration) Small worsening to air quality (See Chapter 13 – Air Quality). 	Not Significant
Sheriffhall House	<ul style="list-style-type: none"> Large adverse visual effects at Year 1 of operation and moderate adverse visual impacts (not significant) at Year 15 of operation (See Chapter 8 – Landscape and Visual Effects). Slight adverse effect on setting of Sheriffhall Farmhouse (LB14183) and Sheriffhall Dovecot (LB19674) (See Chapter 10 – Cultural Heritage) Slight beneficial effect on noise levels in the south-west of the property and slight adverse effect on noise levels in the north-east of the property (See Chapter 12 – Noise and Vibration). Slight adverse effect due to residential land take required to accommodate the Proposed Scheme (See Chapter 15 – People and Communities: Community and Private Assets, and Human Health). Slight adverse effect to due to permanent alteration of the residential accesses (See Chapter 15 – People and Communities: Community and Private Assets, and Human Health) 	Minor Adverse
Old Sheriffhall Farmhouse	<ul style="list-style-type: none"> Large adverse visual effect at Year 1 of operation and moderate adverse visual effect at Year 15 of operation (See Chapter 8 – Landscape and Visual Effects). Slight beneficial effect to noise levels (See Chapter 12 – Noise and Vibration). Slight adverse effect to due to permanent alteration of the residential accesses (See Chapter 15 – People and Communities: Community and Private Assets, and Human Health) 	Not Significant
Sheriffhall Mains Residences	<ul style="list-style-type: none"> Moderate adverse visual effects at Year 1 of operation (See Chapter 8 – Landscape and Visual Effects). Slight adverse effect to noise levels (See Chapter 12 – Noise and Vibration). 	Not Significant
Melville Cottages	<ul style="list-style-type: none"> Slight adverse effect to noise levels (See Chapter 12 – Noise and Vibration). 	Not Significant

Receptor	Description of Residual Impacts	Cumulative Effect
	<ul style="list-style-type: none"> Small worsening to air quality (See Chapter 13 – Air Quality). 	
Melville Grange Cottages	<ul style="list-style-type: none"> Slight beneficial effect to noise levels (See Chapter 12 – Noise and Vibration) Small worsening to air quality (See Chapter 13 – Air Quality). 	Not Significant
Business & Industry Receptors		
Shawfair Business Park Extension Site (Ec1)	<ul style="list-style-type: none"> Slight adverse effect to noise levels (See Chapter 12 – Noise and Vibration) Large adverse effect due to land take required to accommodate the Proposed Scheme (See Chapter 15 – People and Communities: Community and Private Assets, and Human Health). 	Not Significant
Agricultural Land Owned by Landowner P	<ul style="list-style-type: none"> Slight adverse effect to noise levels in some areas (See Chapter 12 – Noise and Vibration) Moderate adverse effect due to land take required to accommodate the Proposed Scheme (See Chapter 15 – People and Communities: Community and Private Assets, and Human Health). Slight adverse effect to due to permanent alteration of the agricultural accesses (See Chapter 15 – People and Communities: Community and Private Assets, and Human Health) 	Not Significant
Community Receptors		
Core Path CEC-4	<ul style="list-style-type: none"> Large beneficial effect to noise levels in some areas (See Chapter 12 – Noise and Vibration) Large beneficial effect on the amenity of the core path routes through the Proposed Scheme (See Chapter 14 – People and Communities: Effects on All Travellers) 	Minor Beneficial

Type 2 Cumulative Impacts

19.3.17 As shown below, a long list of Type 2 receptors has been identified. Those receptors that have the greatest potential for overall Type 2 cumulative impacts and are highlighted in bold below and will be assessed as part of this chapter. The other receptors were scoped out based the level of impacts already identified as part of the assessments with this ES and the location of the other development to be assessed as part of the Type 2 assessment.

Residential Receptors

- **Summerside Residences**
- **Campend Residences**
- Old Sheriffhall Farmhouse
- Sheriffhall House
- **Sheriffhall Mains Residences**
- Melville Cottages
- Melville Grange Cottages

Business Receptors

- Campend Businesses
- Shawfair Business Park Extension Site (Ec1)
- Sheriffhall South (e32)
- Todhills/Drum Farm Business Park
- **Prime Agricultural Land**

Community Receptors

- Core Path CEC-4
- Core Path 4-34
- Core Path 4-8
- Lasswade to Shawfair (Orbital) Shared Path
- **Off-road non-motorised user (NMU) route along A7 South**
- Dalkeith Country Park
- **Ancient Woodland**

Heritage Receptors

- **Possible palisaded enclosure (cropmark) and pit alignment (Canmore)**
- **Summerside Farmhouse (Listed Building)**

19.3.18 The receptors assessed (shown in bold above) are shown on Figure 19.1 'Cumulative Development – Receptors' and Other Developments. Please refer to Figure 15.1 'Community and Private Assets' and Figure 15.2 'Land Ownership' for details on the other receptors listed.

19.3.19 The following assesses the Type 2 cumulative impacts, which as discussed in Paragraph 19.2.12 above includes consideration of 'reasonably foreseeable' developments within a 1 km study area around the Proposed Scheme. 'Reasonably foreseeable' developments include developments with planning permission, planning applications, sites allocated for economic and residential development and EIA developments, as listed in Table 19-3 "Reasonably Foreseeable' Developments to be Assessed'.

- 19.3.20 More information about each of the 'reasonably foreseeable' developments is provided in Appendix 19.1 - Reasonably Foreseeable Developments.

Table 19-3 'Reasonably Foreseeable' Developments to be Assessed

Development	Development Description	Status
Shawfair	New Town and Housing Development	Consented
South Danderhall	Housing Development	Under Construction
Newton Farm	Housing Development	Awaiting Decision
Larkfield North West & South West	Housing Development	Awaiting Decision
Shawfair Park	Business Park	Partially Constructed and Allocated
Shawfair Park Extension	Business Park	Allocated
Sheriffhall South	Business Park	Partially Constructed, Under Appeal and Allocated
Ironmills Park Hydropower Scheme	Hydropower Scheme	Screening/Scoping Issued
A7 Urbanisation	Active Travel and Public Transport Scheme	Proposed

Source: Planning Application Review 22/11/2019

Construction

- 19.3.21 The construction programme and phasing of the individual 'reasonably foreseeable' developments is not yet known but it is assumed, using professional judgement that the individual projects will typically take 1.5 to 2.5 years to complete depending on size and complexity. Some developments are already under construction and as such form part of the existing baseline.
- 19.3.22 Construction impacts generally occur in a localised area in the vicinity of particular construction activities (e.g. earthworks excavations, foundation piling or formation of road pavement). As such, it is unlikely that individual receptors will be affected by multiple projects due to their different construction programmes and the geographic separation of the projects.

Operation

- 19.3.23 The operational impacts of the Proposed Scheme in combination with the other 'reasonably foreseeable' developments as discussed above are set out in Table 19-4 'Type 2 Cumulative Operational Impacts of the Proposed Scheme with other 'Reasonably Foreseeable' Developments' below. Each of the developments considered were assessed against the Proposed Scheme in order to consider possible cumulative impacts.

Table 19-4 Type 2 Cumulative Operational Impacts of the Proposed Scheme with other 'Reasonably Foreseeable' Developments

Development Considered	Possible Cumulative Impacts of 'Reasonably Foreseeable' Developments	Possible Cumulative Impacts of Proposed Scheme
Shawfair	Due to the status of the Shawfair development as 'consented' it is possible the following will result in cumulative impacts in combination with the Proposed Scheme: <ul style="list-style-type: none"> Moderate adverse visual effects on Sheriffhall Mains residences. Large loss of prime of agricultural land. 	<ul style="list-style-type: none"> Slight adverse visual effects on Sheriffhall Mains residences at Year 1 of operation. Slight loss of prime agricultural land.
South Danderhall	Due to the status of the South Danderhall development as 'under construction' it is possible the following will result in cumulative impacts in combination with the Proposed Scheme:	

Development Considered	Possible Cumulative Impacts of 'Reasonably Foreseeable' Developments	Possible Cumulative Impacts of Proposed Scheme
	<ul style="list-style-type: none"> Moderate adverse visual effects on Sheriffhall Mains residences. Moderate loss of prime of agricultural land. 	<ul style="list-style-type: none"> Slight adverse visual effects on Sheriffhall Mains residences at Year 1 of operation. Slight loss of prime agricultural land.
Newton Farm	<p>Due to the status of the Newtown Farm development as 'awaiting decision' it is possible the following will result in cumulative impacts in combination with the Proposed Scheme:</p> <ul style="list-style-type: none"> Moderate adverse visual effects on Sheriffhall Mains residences. Large loss of prime of agricultural land. 	<ul style="list-style-type: none"> Slight adverse visual effects on Sheriffhall Mains residences at Year 1 of operation. Sight loss of prime of agricultural land.
Larkfield North West & South West	<p>Due to the status of the Larkfield development as 'awaiting decision' it is possible the following will result in cumulative impacts in combination with the Proposed Scheme:</p> <ul style="list-style-type: none"> Slight adverse effect due to possible loss of Ancient Woodland. Moderate loss of prime of agricultural land. 	<ul style="list-style-type: none"> Moderate adverse effect due to loss of Ancient Woodland. Slight loss of prime of agricultural land.
Shawfair Park	<p>Due to the status of the Shawfair Park development as 'partially constructed' the impacts of the Proposed Scheme in combination with the existing development will already have been assessed in the topic chapters.</p>	
Shawfair Park Extension (Ec1)	<p>Due to the status of the Shawfair Park Extension development as 'allocated' it is unlikely there will be cumulative impacts in combination with the Proposed Scheme, however, if this site is developed before the mitigation planting for the Proposed Scheme is established, it is possible the following will result in cumulative impacts in combination with the Proposed Scheme:</p> <ul style="list-style-type: none"> Moderate adverse visual effects on the Campend residences. Moderate adverse visual effects on the Sheriffhall Mains residences. Moderate adverse visual effects on the Summerside residences. Moderate adverse effect on the setting of Summerside Farmhouse (LB14186). Moderate loss of prime of agricultural land. 	<ul style="list-style-type: none"> Slight adverse visual effects on the Campend residences at Year 1 of operation. Slight adverse visual effects on the Sheriffhall Mains residences at Year 1 of operation. Slight adverse visual effects on the Summerside residences at Year 1 of operation. Slight adverse effect on the setting of Summerside Farmhouse (LB14186). Slight loss of prime of agricultural land.
Sheriffhall South (e32)	<p>Due to the status of the Sheriffhall South development as 'under appeal' it is possible the following will result in cumulative impacts in combination with the Proposed Scheme:</p> <ul style="list-style-type: none"> Slight adverse effect due to possible loss of Ancient Woodland. Slight adverse effect on the setting of possible palisaded enclosure (cropmark) (MEL8401) and pit alignment (MEL10015). Moderate loss of prime of agricultural land. 	<ul style="list-style-type: none"> Moderate adverse effect due to loss of Ancient Woodland. Slight adverse effect on the setting of possible palisaded enclosure (cropmark) (MEL8401) and pit alignment (MEL10015). Slight loss of prime of agricultural land.
Ironmills Park Hydropower Scheme	<p>Due to the status of the Sheriffhall South development as 'screening/scoping issued' it is possible the following will result in cumulative impacts in combination with the Proposed Scheme:</p> <ul style="list-style-type: none"> Slight adverse effect due to possible loss of Ancient Woodland. 	<ul style="list-style-type: none"> Moderate adverse effect due to loss of Ancient Woodland.
A7 Urbanisation	<p>Due to the status of the A7 Urbanisation scheme as 'proposed' it is possible the following will result in cumulative impacts in combination with the Proposed Scheme:</p> <ul style="list-style-type: none"> Moderate beneficial effect on amenity of off-road NMU routes on both side of the A7 South. 	<ul style="list-style-type: none"> Moderate beneficial effect on amenity of off-road NMU routes on both side of the A7 South.

19.3.24 Each of the impacts identified in the table above has been combined under the relevant receptor in Table 19-5 'Summary of Type 2 Cumulative Impacts on Individual Receptors' below. The combined residual impacts are then assessed to be significant or not significant using professional judgement and Table 19-1 'Determining Significance of Cumulative Effects'.

Table 19-5 Summary of Type 2 Cumulative Impacts on Individual Receptors

Receptor	Summary of Impacts	Significance
Sheriffhall Mains Residences	<ul style="list-style-type: none"> Slight adverse visual effect on Sheriffhall Mains residences at Year 1 of operation as a result of the Proposed Scheme. Moderate adverse visual effect on Sheriffhall Mains residences due as a result of the Shawfair development. Moderate adverse visual effect on Sheriffhall Mains residences due as a result of the South Danderhall development. Moderate adverse visual effect on the Sheriffhall Mains residences as a result of the Shawfair Park Extension development. 	Minor Adverse
Ancient Woodland	<ul style="list-style-type: none"> Moderate adverse effect due to loss of Ancient Woodland as a result of the Proposed Scheme. Possible slight adverse effect due to loss of Ancient Woodland as a result of the Larkfield development. Possible slight adverse effect due to loss of Ancient Woodland as a result of the Sheriffhall South development. Possible slight adverse effect due to loss of Ancient Woodland as a result of the Ironmills Park development. 	Not Significant
Prime Agricultural Land (Class 2)	<ul style="list-style-type: none"> Slight adverse effect due to loss of Prime Agricultural Land as a result of the Proposed Scheme Large adverse effect due to loss of Prime Agricultural Land as a result of the Shawfair development. Moderate adverse effect due to loss of Prime Agricultural Land as a result of the South Danderhall development Large adverse effect due to loss of Prime Agricultural Land as a result of the Newton Farm development. Moderate adverse effect due to loss of Prime Agricultural Land as a result of the Larkfield development. Moderate adverse effect due to loss of Prime Agricultural Land as a result of the Shawfair Park Extension development. Moderate adverse effect due to loss of Prime Agricultural Land as a result of the Sheriffhall South development. 	Moderate Adverse
Campend Residences	<ul style="list-style-type: none"> Slight adverse visual effect on the Campend residences at Year 1 of operation as a result of the Proposed Scheme. Moderate adverse visual impacts on the Campend residences as a result of the Shawfair Park Extension development. 	Minor Adverse
Summerside Residences	<ul style="list-style-type: none"> Slight adverse visual effect on the Summerside residences at Year 1 of operation as a result of the Proposed Scheme. Slight adverse effect on the setting of Summerside Farmhouse (LB14186) as a result of the Proposed Scheme. Moderate adverse visual effect on the Summerside residences as a result of the Shawfair Park Extension development. Moderate adverse effect on the setting of Summerside Farmhouse (LB14186) as a result of the Shawfair Park Extension development. 	Minor Adverse
Possible palisaded enclosure (cropmark) and pit alignment	<ul style="list-style-type: none"> Slight adverse effect on the setting as a result of the Proposed Scheme Slight adverse effect on the setting as a result of the Sheriffhall South development. 	Not Significant
Off-road NMU routes on both sides of the A7 South	<ul style="list-style-type: none"> Moderate beneficial effect on amenity of off-road NMU routes as a result of the Proposed Scheme. Moderate beneficial effect on amenity of off-road NMU routes as a result of the A7 Urbanisation Scheme. 	Minor Beneficial

19.3.25 The residences at Sheriffhall Mains, Campend and Summerside have all been identified as receiving a minor impact by the Proposed Scheme in combination with the 'reasonably foreseeable' developments considered as part of this assessment. However, it should be noted that these receptors will only be impacted by the Proposed Scheme in combination with the other developments considered if the Proposed Scheme's mitigation planting has not yet been established by the time the 'Developments Considered' are in operation. It is therefore assessed that these impacts are likely to be not significant.

19.4 Mitigation

- 19.4.1 No additional mitigation measures have been proposed for the Type 1 or Type 2 cumulative impacts beyond measures that have already been named in Chapter 8 to 18 of this ES.
- 19.4.2 Mitigation planting is included in Chapter 8 – ‘Landscape and Visual Effects’ which provides mitigation against the impact of the Proposed Scheme on the residences at Sheriffhall Mains, Campend and Summerside.
- 19.4.3 As discussed in Chapter 4 – ‘Iterative Design Development’ throughout Stage 3 design efforts were made to ensure that land take was kept to a minimum. This ensured that impacts on local receptors have been reduced where possible particularly in relation to Ancient Woodland and prime agricultural land.

19.5 Monitoring

- 19.5.1 No mitigation measures specific to identified significant cumulative effects are proposed, above those measures already set out in Chapters 8-18 and summarised in Chapter 20 – Schedule of Environmental Commitments. On that basis, no monitoring of cumulative effects is proposed.

19.6 Conclusions

- 19.6.1 A number of receptors have been identified and assessed as part of this cumulative assessment and a number of potential cumulative impacts of the Proposed Scheme (Type 1 impacts) and cumulative impacts of the Proposed Scheme in combination with other developments (Type 2 impacts) have been identified.
- 19.6.2 Minor adverse cumulative impacts on Sheriffhall House and minor beneficial cumulative impacts on the core path receptors (Core Path 4-34 and CEC-4) are expected as a result of the Proposed Scheme (Type 1 impacts).
- 19.6.3 Minor adverse Type 2 cumulative impact on Sheriffhall Mains, Summerside and Campend residences identified above are not expected outcomes as these receptors will only be impacted by the Proposed Scheme if the Proposed Scheme’s mitigation planting has not yet been established by the time the ‘Developments Considered’ are in operation.
- 19.6.4 There will be a **moderate** adverse Type 2 cumulative impact due to the loss of prime agricultural land (class 2) within the study area as a result of the Proposed Scheme and multiple other ‘reasonably foreseeable’ developments.
- 19.6.5 The Proposed Scheme and the A7 Urbanisation Scheme will have a combined minor beneficial impact on the amenity of off-road NMU routes on both sides of the A7 South.

19.7 References

European Communities (1999) ‘Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions’. Luxembourg: Office for Official Publications of the European Communities.

The Highways Agency, et al. (2008) Design Manual for Roads and Bridges (DMRB), Volume 11, Section 2, Part 5 ‘Assessment and Management of Environmental Effects’ (HA205/08)

The Highways Agency, et al. (2019) Design Manual for Roads and Bridges (DMRB), Volume 11, Section 2, Part 4 ‘Environmental assessment and monitoring’ (LA104)

Scottish Government (2013) Planning Advice Note (PAN) 1/2013 ‘Environmental Impact Assessment’