

## **7 Land Use**

This chapter considers the potential impacts of the proposed scheme on existing and future land use.

The main settlements to the north of the Firth of Forth include Dunfermline, Rosyth, Inverkeithing, Dalgety Bay and North Queensferry. Settlements to the south of the Firth of Forth include South Queensferry, Dalmeny, Winchburgh and Kirkliston.

The study area includes areas of high quality (prime) agricultural land located both north and south of the Firth of Forth. The proposed scheme would result in the loss of approximately 100ha of agricultural land, comprising 74% of prime, 6% of non-prime land and 20% woodland and scrub. Of the 100ha, approximately 84.6 ha is from land interests with active agricultural, sporting and forestry operations. The remaining land is not actively farmed.

Businesses local to the proposals and those in the wider regions of Fife and the Lothians would benefit from the improved accessibility provided by the scheme. Land-take would be required from 11 commercial properties, resulting in adverse impacts possibly affecting the viability of two businesses. The gardens of one residential property, Inchgarvie House, would be affected by permanent land-take. Some community land would be affected by land-take. This relates to areas where the alignment of the proposed scheme encroaches on the edge of recreation spaces including fields, marshland and a cemetery.

The proposed scheme would also require some areas of land that are identified for future development such as housing or employment. Adverse impacts are anticipated for eight development allocations.

The development of the proposed scheme design has sought to avoid sensitive land and buildings. Additional mitigation measures to reduce remaining impacts include reinstatement of accesses and boundary features, and the return of land to agricultural use where practical.

### **7.1 Introduction**

7.1.1 This chapter presents the assessment of the proposed scheme on existing and future land uses. Land uses which have been considered include agricultural, sporting and forestry interests, as well as community, residential, commercial and development land. The chapter is supported by the following appendices, which are cross-referenced in the text where relevant:

- Appendix A7.1: Business Questionnaire;
- Appendix A7.2: Business Impacts [confidential report];
- Appendix A7.3: Agricultural, Forestry and Sporting Interests Questionnaire;
- Appendix A7.4: Agricultural Land Capability Descriptors;
- Appendix A7.5: Assessment of Development Land; and
- Appendix A7.6: Impacts on Agriculture, Sporting and Forestry Interests.

7.1.2 In accordance with DMRB Volume 11, Section 3, Part 6 (Highways Agency et al., 2001), the land use assessment focuses on land-take created as a direct result of the proposed scheme. Although community land is addressed, impacts such as changes in access to it or the amenity of paths used by pedestrians are considered in Chapter 17 (Pedestrians, Equestrians, Cyclists and Community Effects).

7.1.3 The emphasis of this chapter is on permanent and operational impacts of the proposed scheme. Temporary land use impacts during construction are considered separately in Chapter 19 (Disruption Due to Construction), except where considered in relation to impacts on likely future farm and business viability.

### **Residential and Commercial Land**

- 7.1.4 The assessment of impacts of the proposed scheme on residential and commercial land uses is concerned with the changes in access, parking arrangements or the loss of homes, facilities, amenities, services or employment associated with land-take.
- 7.1.5 A questionnaire was used to inform the assessment of business viability and is provided in Appendix A7.1. The responses to this questionnaire contain commercially sensitive information and are therefore provided in a confidential appendix provided to the Scottish Parliament (Appendix A7.2).

### **Community Land**

- 7.1.6 For the purposes of this assessment, community land is considered to relate to areas that provide an established public recreational resource (such as playing fields, country parks, or areas identified as Open Space within Local Plans). As noted in Chapter 17 (Pedestrians, Cyclists, Equestrians and Community Effects), the Land Reform (Scotland) Act 2003 establishes statutory rights of responsible access on and over most land. It is therefore acknowledged that additional areas of privately owned land may be used informally by the community. Undesignated areas of open space and woodland of known amenity value are therefore also considered in the assessment. Recreational use of waterways, including the Firth of Forth, is also considered as part of the community land assessment.
- 7.1.7 DMRB Volume 11, Section 3, Part 6 (Highways Agency et al., 2001) also requires that any potential impacts on un-navigable, disused waterways and any waterway restoration or development proposals be considered (refer to paragraph 7.2.14).

### **Development Land**

- 7.1.8 For the purposes of this assessment, development land relates to allocations for development as identified in Structure and Local Plans, as well as relevant planning applications lodged with the planning authorities.

### **Agricultural, Sporting and Forestry Interests**

- 7.1.9 The assessment of impacts on agricultural, sporting and forestry (commercial) interests was undertaken by SAC. For the purposes of this assessment, agriculture is considered to be the practice of cultivating the land and rearing stock to produce food products. Sporting interests include activities such as shooting and stalking over agricultural land and forestry, as well as water and fishing activities in and on lochs, reservoirs, rivers, burns, canals and ponds. Forestry is defined in relation to the growing of trees to produce wood and wood products.

## **7.2 Approach and Methods**

- 7.2.1 The assessment of the potential impacts of the proposed scheme on land use was undertaken in accordance with the DMRB Volume 11, Section 3, Part 6 (Highways Agency et al., 2001). The approach used to establish the baseline conditions and assess the significance of the impacts of the proposed scheme is explained below.

### **Study Area**

- 7.2.2 Baseline conditions were described to provide an overview of land use to the north and south of the Firth of Forth in the general area (as shown on Figure 7.2) although for agricultural, sporting and forestry interests the baseline description focused on the landholding extents of areas that would be crossed by the proposed scheme. For residential and commercial uses, the baseline includes some activities located outside the area shown on Figure 7.2 because some water-based

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commercial activities that operate in the vicinity of the Main Crossing are actually located beyond the reported study area.

7.2.3 The study area for the purposes of impact assessment varied according to the aspects of land use which were under consideration. The assessment of development land requires consideration of changes in amenity such as noise and air quality impacts therefore a wider study area is used than for other aspects where the impacts relate more directly to land-take. The study area is defined for the different land use aspects as follows:

- Residential and commercial: receptors where land-take would be required for the proposed scheme.
- Community land: areas that would be subject to direct land-take for the proposed scheme.
- Development land: planning applications and development plan allocations that are situated within 600m of the proposed scheme.
- Agricultural, sporting and forestry interests: the area of land farmed and managed by the land interests that would be subject to the land-take requirements of the proposed scheme.

#### **Land-take**

7.2.4 Land-take is defined as land acquired through the Parliamentary Bill process to provide sufficient land to construct and operate the proposed scheme. The land use assessment considers both permanent and temporary land-take, definitions of which are provided below.

#### Permanent

7.2.5 For the purpose of this assessment, permanent land-take is considered to be areas directly required for the long term operation of the proposed scheme and includes land required for environmental mitigation such as landscape planting.

7.2.6 As explained in Chapter 4 (The Proposed Scheme), an Intelligent Transport System (ITS) is currently being developed. The precise locations of features such as signage and overhead gantries are still being considered, but would require only small areas of land (all less than 0.5ha) in specific locations either within or immediately adjacent to the highway boundary. Any land-take impacts of the ITS would be negligible and were therefore scoped out of this assessment. Areas of woodland required for the installation of bat boxes on individual trees (refer to Figure 12.4 for general locations) were scoped out of the assessment as no changes to land use are anticipated.

#### Temporary

7.2.7 For the purposes of assessment, temporary land-take is considered to be areas temporarily required to construct the proposed scheme, such as land required for temporary construction compounds. Details of temporary land-take impacts are generally provided in Chapter 19 (Disruption due to Construction).

7.2.8 Temporary land-take is only considered in this chapter where it may result in long term or permanent changes i.e. in the assessment of likely future farm and business viability. Some temporary land-take is agricultural land and it is assumed that where possible these areas will be returned to agricultural use (refer to Section 7.5: Mitigation). Figure 19.1 identifies the likely locations for construction compounds which will be returned to agricultural use.

#### **Baseline Conditions**

#### Residential and Commercial Land

7.2.9 Baseline conditions for residential and commercial uses were determined through a review of Ordnance Survey (OS) maps, GIS data and site surveys. Key stakeholders such as Forth Ports

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and the Scottish Fisheries Protection Agency were consulted in order to gain an understanding of navigational routes and commercial use of the Firth of Forth.

- 7.2.10 A business questionnaire was sent to all businesses potentially impacted by land-take as a result of the proposed scheme (refer to paragraph 7.1.5). The questionnaire included requests for baseline information such as the type of business, number of employees, information on the business performance and future operations where available.
- 7.2.11 Structured interviews were undertaken with these businesses to clarify and expand upon the information requested by the questionnaires and included discussions on the following:
- the potential impacts - including loss of buildings and land and the likely effect on business activity, employment and on the efficiency of the business; and
  - mitigation measures - the interviewee was asked to identify what, in their view, could be done to mitigate the impact and how this would reduce the effect of such impact.
- 7.2.12 A copy of the business questionnaire is included in Appendix A7.1.

#### Community Land

- 7.2.13 Baseline conditions were determined through an initial desk study including a review of relevant OS maps, GIS data, aerial photographs and Local Plans. Site surveys were used to verify the areas of community land identified by the desk study. In addition, areas used by the public for informal recreation were highlighted through consultation with local Community Councils and feedback obtained through public exhibitions held on 20-31 January 2009. Refer to Chapter 6 (Scoping and Consultation) in relation to stakeholder consultation and also the FRC Feedback and Outcomes (Transport Scotland, 2009) report for details of public feedback.
- 7.2.14 A desk top review was undertaken to identify any relevant waterway restoration projects. The report on Waterway Restoration Priorities (IWAAC, 1998) identifies the Scottish Millennium Link project (Forth and Clyde and Union Canals) which has now been completed. No other relevant waterway restoration projects are proposed by the subsequent review report (IWAAC, 2006). British Waterways was consulted regarding any recent projects that may be impacted by the proposed scheme. As no relevant waterway restoration projects have been identified, this is not considered further in this chapter.

#### Development Land

- 7.2.15 Potential development land was identified using land allocations set out in the relevant development plans for Fife Council, the City of Edinburgh Council and West Lothian Council. The three councils were contacted to identify relevant planning applications within the study area and an internet search for planning applications using the planning portals was also undertaken.
- 7.2.16 Applications submitted between 31 May 2004 and 31 May 2009 have been considered for this assessment. Proposed developments have a period of up to five years to be implemented upon the grant of full planning permission. Applications before 31 May 2004 have therefore been discounted, since they would have either been implemented or planning permission would have lapsed. For projects where planning permission has lapsed, the renewal of these applications would be identified through the search process and included in the assessment. Also, where information has been provided to confirm the partial implementation of development, it is assumed that these applications are still valid. For example, this includes the application for the Springfield Housing site to the west of South Queensferry.
- 7.2.17 The review of planning applications included those approved, those pending consideration and those refused but currently awaiting an appeal. Planning applications excluded are householder applications for improvements/extensions, change of use, enforcement actions and applications that have been withdrawn, refused or located outwith the study area as defined in paragraph 7.2.3.

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Applications for a development that has been completed and/or for a site that has become operational have been excluded from the assessment as they are considered to contribute to the existing baseline conditions e.g. residential development at Stirling Road, Kirkliston (designated as HSP2 in the Rural West Edinburgh Local Plan).

7.2.18 Consultation meetings were held with Fife, the City of Edinburgh and West Lothian councils during January and February 2009 to obtain the in-confidence views of the planning officers on the impacts on development land.

7.2.19 The cumulative impacts of major developments that are likely to be constructed during similar timeframes as the proposed scheme are reported in Chapter 21 (Cumulative Impact Assessment).

#### Agricultural, Sporting and Forestry Interests

7.2.20 The identification of baseline conditions involved a combination of:

- desk-based research of information sources in relation to agricultural, sporting and forestry uses; including OS maps, GIS, aerial photographs and published Macaulay Land Use Research Institute (MLURI) Land Capability for Agriculture data;
- consultation where appropriate with interested parties and organisations including Scottish Government Rural Payment and Inspections Directorate (SGRPID);
- identification of characteristics and extent of different agricultural, sporting and forestry land management activities along the length of the proposed scheme;
- site visits and inspections by experienced professionals; and
- interviews with the landowners and tenants whose land would be directly affected by the proposed scheme. The agricultural business units are defined on the basis of their operation and in some instances may include areas of land may be under different ownership.

7.2.21 Structured interviews were held with the landowners and tenants of the potentially affected farms and holdings, and with forestry and sporting landowners and managers within the study area. This allowed the following baseline information to be ascertained:

- extent of property holdings and form of land ownership;
- land use, management and performance levels attained;
- labour and machinery resources;
- sporting activity and management;
- other business interests; and
- existing grants.

7.2.22 The questionnaire used during the landowner interviews can be found in Appendix A7.3 (Agricultural, Forestry and Sporting Interests Questionnaire). The feedback from these interviews was supplemented by the following assessments:

#### *Land Use and Land Capability*

7.2.23 Available Macaulay Land Use Research Institute (MLURI) Land Capability for Agriculture data were used to indicate the land class along the route of the proposed scheme. This classification system gives an indication of the capability of the land to grow certain types of crops and grass. The full classification can be found in Appendix A7.4. Land is classified into seven main classes, some of which have subdivisions. Class 1 is the best quality land and Class 7 is the poorest quality land. Classes 1, 2 and 3.1 are known as prime quality land and Classes 3.2 to 7 are known as non-prime land.

7.2.24 The MLURI data were verified for the agricultural fields affected by the proposed scheme during site visits with assessments of topsoil depth, soil texture, soil colour, wetness, stone content and gradient. For offline sections, test pits were examined on a grid basis with one pit per 0.67ha. For online sections where construction works encroached into agricultural land and where associated infrastructure would be required by the proposed scheme, further test pits were assessed with the same frequency. This allowed a full and complete assessment of the land according to the MLURI classification system. Further details of this assessment are provided in Appendix A7.4.

**Impact Assessment**

7.2.25 As described below, the significance of impacts on residential, commercial, community and agricultural land use is assessed taking into account receptor sensitivity and impact magnitude. A different approach is described for the development land and business viability assessments as standard significance terms are not appropriate.

Residential, Commercial and Community Land

7.2.26 The assessment of impacts on residential and commercial uses, and also community land, considers the direct impacts caused by demolition and requirements for land-take to land owners and lease holders as a consequence of the proposed scheme. Assessment of the impact was undertaken by determining the sensitivity and magnitude according to the criteria in Table 7.1 and Table 7.2 below. The impact significance was then determined using Table 7.3.

7.2.27 As shown in Table 7.1, the sensitivity of community land is defined by the level of users at which visitors are attracted i.e. local, regional or national. Although cemeteries are generally used by the local community they were assessed as being of high sensitivity. The loss of residential or commercial property through demolition or where buildings become uninhabitable is assessed as high sensitivity. Land-take from residential or commercial property is considered less sensitive and is therefore assessed as medium sensitivity with derelict/unoccupied buildings the least sensitive.

7.2.28 Where a property is used for both residential and business purposes, the higher sensitivity criteria is assumed.

**Table 7.1: Sensitivity Criteria for Residential, Commercial and Community Land**

Sensitivity	Description
High	<ul style="list-style-type: none"> <li>Residential or commercial property.</li> <li>Property or land used by the community e.g. schools, community halls.</li> <li>Community land that attracts users nationally e.g. national parks.</li> <li>Cemeteries.</li> </ul>
Medium	<ul style="list-style-type: none"> <li>Residential or commercial land e.g. gardens.</li> <li>Land used by the community on a regional scale, e.g. Country Parks, forests and other land managed in such a way as to attract visitors from a regional catchment.</li> </ul>
Low	<ul style="list-style-type: none"> <li>Derelict or unoccupied buildings.</li> <li>Locally used community land, e.g. local parks and playing fields.</li> </ul>

*Impact Magnitude*

**Table 7.2: Impact Magnitude Criteria for Residential, Commercial and Community Land**

Magnitude	Description
High	Demolition of property, >50% loss of land and/or complete severance due to land-take.
Medium	Between 15% and 50% loss of land and/or major severance due to land-take.
Low	<15% land loss and/or partial severance due to land-take.
Negligible	Very slight change from the baseline condition. Change hardly discernible, approximating to a 'no change' in conditions.

*Impact Significance*

**Table 7.3: Impact Significance Matrix for Residential and Commercial and Community Land**

<b>Magnitude</b> <b>Sensitivity</b>	<b>Negligible</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>High</b>	Slight	Slight / Moderate	Moderate / Substantial	Substantial
<b>Medium</b>	Negligible / Slight	Slight	Moderate	Moderate / Substantial
<b>Low</b>	Negligible	Negligible / Slight	Slight / Moderate	Moderate

*Likely Future Business Viability*

- 7.2.29 DMRB Volume 11, Section 3, Part 6 (Highways Agency et al., 2001) guidance requires an assessment of the likely effects on future viability of individual businesses affected by the proposed scheme.
- 7.2.30 A qualitative assessment of impacts on the viability of individual businesses was undertaken using the following criteria:
- Beneficial Impact: the business is likely to be able to continue trading and developing as planned and the proposed scheme may make a beneficial contribution to business development;
  - Neutral Impact: the business is affected by the land-take requirements of the proposed scheme, but no impacts on viability have been identified and the business is likely to be able to continue trading; and
  - Adverse Impact: the business may have to reduce its activities, relocate or close completely.
- 7.2.31 Qualitative assessment of business viability was based on the results of interviews and questionnaires, with any effects on business viability assigned into one of the three categories above. It should be noted that this DMRB assessment does not provide more detailed analysis of the scale of beneficial or adverse impact on business viability.
- 7.2.32 Financial compensation for the loss of any residential or commercial land would be assessed by the District Valuer and was therefore not considered as part of the assessment of business viability process. This ensured that a worst-case approach was taken.

Development Land

- 7.2.33 The assessment of impacts on development land was undertaken using the following criteria:
- Beneficial – the land would still be available for the proposed use and the development of the proposed scheme would improve the viability of the site for the proposed development (generally through improved access). Impacts on the amenity of the site would not interfere with its proposed use or the impact on the amenity would be beneficial, in that the proposed scheme would improve the site’s appropriateness for its proposed use.
  - Neutral – the land would still be available for the proposed use and there would be no discernable impact on the viability of the site for the proposed development. There would be no impact on the amenity of the site that would interfere with its proposed use.
  - Adverse – some of or the entire site would no longer be available for the proposed use and the proposed scheme would reduce viability of the development taking place or would impact on the amenity of the site in such a way as to interfere with its proposed use.
  - Mixed – assessment of potential impacts includes some adverse and some beneficial factors.

Agricultural, Sporting and Forestry Interests

7.2.34 The assessment of impacts on agricultural, sporting and forestry interests was undertaken by determining the sensitivity and magnitude according to the criteria in Table 7.4 and Table 7.5 below. The impact significance was then determined using Table 7.6.

*Sensitivity*

7.2.35 Professional judgement was used to consider the range of sensitivity characteristics found during the baseline data collection process for each agricultural, sporting and forestry land interest, and a sensitivity rating was assigned accordingly.

**Table 7.4: Criteria for Sensitivity of Agricultural, Sporting and Forestry Interests**

Sensitivity	Characteristics
<b>High</b>	<ul style="list-style-type: none"> <li>• Small farm size (&lt;50ha).</li> <li>• Presence of prime quality land (Class 1, 2 and 3.1).</li> <li>• Conventionally farmed intensive arable cropping or intensive livestock systems (e.g. dairying).</li> <li>• Land of any farm type farmed according to organic or biodynamic standards.</li> <li>• High value commercial sporting activity (e.g. salmon fishing).</li> <li>• High value woodland that is rare or distinctive and susceptible to small changes.</li> </ul>
<b>Medium</b>	<ul style="list-style-type: none"> <li>• Medium farm size (50ha - 150ha).</li> <li>• Presence of land of moderate quality (Class 3.2 and 4).</li> <li>• Conventionally farmed mixed cropping and livestock systems of moderate intensity.</li> <li>• Moderate value commercial sporting activity (e.g. pheasant shooting).</li> <li>• Moderate value woodlands tolerant to moderate levels of change.</li> </ul>
<b>Low</b>	<ul style="list-style-type: none"> <li>• Large farm size (&gt;150ha).</li> <li>• Presence of land of low quality (Class 5, 6 and 7).</li> <li>• Conventionally farmed extensive livestock systems or agricultural land in non-agricultural use.</li> <li>• Low value sporting activity (e.g. rough shooting).</li> <li>• More commonplace woodland tolerant of noticeable change or undergoing substantial development.</li> </ul>

*Impact Magnitude*

7.2.36 As indicated in Table 7.5 below, the magnitude of impacts is based on a range of characteristics and takes into account factors such as land-take, severance and access. Severance impacts refer to:

- situations where the proposed scheme would cut through land parcels, potentially affecting access and also creating field sizes and shapes which may become impractical for agricultural use; and
- situations where the main farm steading would be separated from land parcels.

7.2.37 Land-take is calculated based on the area affected by the anticipated land required for the proposed scheme, together with any areas of severed land parcels that would be rendered redundant for agricultural use. Any surplus land acquired for the proposed scheme may be offered back to former owners or their successors in accordance with the Crichel Down Rules (DCLG, 2004). For the assessment of agricultural land, it is therefore assumed that areas identified for the construction compounds (refer to Figure 19.1) would be returned to agricultural use.

7.2.38 The magnitudes of the various impacts, both pre- and post mitigation, were determined and an overall magnitude assigned for each agricultural, sporting and forestry land interest accordingly.



**Table 7.5: Criteria for Magnitude of Impacts on Agricultural, Sporting and Forestry Interests**

Magnitude	Impact Description
<b>High</b>	<ul style="list-style-type: none"> <li>• Loss of more than 10% of the land holding.</li> <li>• High degree of severance extending to more than 20% of the land holding.</li> <li>• Access to agricultural, sporting and forestry land restricted.</li> <li>• High degree of disruption to cultivation patterns and with high risk of change in land use.</li> <li>• Disruption to driven shooting and/or high value fishing (e.g. salmon).</li> <li>• Noticeable change to the woodland over a wide area or an intensive change over a limited area.</li> </ul>
<b>Medium</b>	<ul style="list-style-type: none"> <li>• Loss of between 5% and 10% of the land holding.</li> <li>• Moderate degree of severance extending to between 10% and 20% of the land holding.</li> <li>• Access to agricultural, sporting and forestry land compromised.</li> <li>• Moderate degree of disruption to cultivation patterns with moderate risk of change in land use.</li> <li>• Disruption to walked-up shooting and/or medium value fishing (e.g. trout).</li> <li>• Small changes to the woodland over a wide area or a noticeable change over a limited area.</li> </ul>
<b>Low</b>	<ul style="list-style-type: none"> <li>• Loss of less than 5% of the land holding.</li> <li>• Low degree of severance extending to less than 10% of the land holding.</li> <li>• Minimal change in access to agricultural, sporting and forestry land.</li> <li>• Minimal degree of disruption to cultivation patterns and low risk of change in land use.</li> <li>• Disruption to rough shooting and/or low value fishing (e.g. no permit charged).</li> <li>• Very minor changes to the woodland over a wide area or minor changes over a limited area.</li> </ul>
<b>Negligible</b>	<ul style="list-style-type: none"> <li>• Negligible change to all of the above factors.</li> </ul>

*Impact Significance*

7.2.39 The overall impact significance was determined taking into account sensitivity and magnitude, as set out in Table 7.6. It should be noted that as this assessment includes a wide range of considerations, the final significance category may be adjusted using professional judgement. Where such an adjustment was made, an explanation is provided within the assessment.

**Table 7.6: Determination of Impact Significance for Agricultural, Sporting and Forestry Interests**

Magnitude \ Sensitivity	Negligible	Low	Medium	High
High	Slight	Slight/Moderate	Moderate/Substantial	Substantial
Medium	Negligible/Slight	Slight	Moderate	Moderate/Substantial
Low	Negligible	Negligible/Slight	Slight/Moderate	Moderate

*Likely Future Farm Viability*

7.2.40 DMRB Volume 11, Section 3, Part 6 (Highways Agency et al., 2001) guidance requires an assessment of the likely future viability of individual farms affected by the proposed scheme.

7.2.41 The effects on future viability, particularly relating to land-take and severance issues, are considered for agricultural, sporting and forestry interests where the significance of residual impact (as defined by Table 7.6) is Moderate or above. In undertaking this viability assessment, the general principles applied relate to whether the farming unit has the potential to adapt its operations and whether it can continue to operate as a farming unit.

7.2.42 It is assumed that compensation as agreed with the District Valuer would be available for land required as part of the proposed scheme, severance, injurious affection and disturbance. However, the determination of financial compensation is outside the remit of the EIA process and is therefore unknown at this stage of the project. As such any compensation payments payable are not considered as mitigation or as part of the agricultural viability assessment.

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- 7.2.43 Any surplus land acquired for the proposed scheme may be offered back to former owners or their successors in accordance with the Crichton Down Rules. For the assessment of agricultural land, it is therefore assumed that areas identified for the construction compounds (refer to Figure 19.1) would be returned to agricultural use.

#### Limitations to Assessment

- 7.2.44 Land-take estimates are based on the extent of the anticipated land-take requirements for the proposed scheme including mitigation measures proposed in this ES. It should be noted that at the time of completion of this assessment the development of detailed, site-specific mitigation proposals are subject to ongoing discussions with land owners and could result in slight changes to the specific land-take requirements of the proposed scheme.
- 7.2.45 The scope of the assessment covers direct impacts associated with land-take, however it is recognised that there may also be wider indirect beneficial and adverse socio-economic effects particularly for businesses and local communities that utilise the Firth of Forth and surrounding areas. Indirect impacts are difficult to accurately quantify and relate to a variety of factors which are not associated with land-take. Assessment of wider indirect impacts was therefore qualitative only.
- 7.2.46 As noted in paragraph 7.2.31 the assessment methods for business viability for the purposes of this ES do not permit detailed economic analysis.
- 7.2.47 DMRB Volume 11, Section 3, Part 6 (Highways Agency et al., 2001) recommends the use of user access surveys to help identify the value of community land. In Scotland, the more recent Land Reform Act (Scotland) 2003 states that *'it is the duty of the local authority to assert, protect and keep open and free from obstruction or encroachment any route, waterway or other means by which access rights may reasonably be exercised.'* It is therefore considered that regardless of levels of use and types of user, all routes should be maintained and/or improved where practicable. User surveys have therefore not been undertaken as the sensitivity of community land is defined by the scale of its use, for example local, regional or national level, instead of the number of users.
- 7.2.48 Whilst the approach adopted for assessing the impact on agricultural, forestry and sporting interests has involved undertaking interviews and site surveys for the affected land interests, in some instances this has not been possible as access was denied. For these land interests (i.e. ref 15, 11 and 16 shown on Figure 7.1), a general assessment has been undertaken based on the information available.
- 7.2.49 There are also some differences between the woodland areas identified for ecology and agricultural land due to the different focuses of these assessments. The ecology assessment considers woodland in terms of habitat and presence of protected species, and is based on a habitat survey. The agricultural land assessment considers the loss of land and therefore only identifies woodland close to the proposed scheme based on OS information and on-site surveys.
- 7.2.50 DMRB Volume 11, Section 3, Part 6 (Annex II) (Highways Agency et al., 2001) identifies the potential for 'blight' that could occur as part of a road scheme yet the guidance does not require its assessment. Blight manifests itself as the reduction in property prices and/or the partial dereliction of an area due to its proximity to the proposed scheme. Property prices are not a material consideration in the planning process and therefore were not assessed as part of the EIA, however factors that may contribute to blight are considered in the context of amenity (e.g. noise, visual disturbance and community effects) and are included within the relevant chapters of this ES (Chapter 13: Visual, Chapter 15: Air Quality and Chapter 16: Noise and Vibration).

## **7.3 Baseline Conditions**

### **Residential and Commercial Land**

- 7.3.1 To determine the potential land uses affected by land-take resulting from the proposed scheme, an overview of the main residential areas, educational facilities, businesses and transport infrastructure is provided below. The key land uses are also identified on Figure 7.2.

#### Residential Areas

- 7.3.2 The main residential communities to the north of the Firth of Forth include the settlements of Dunfermline, Rosyth, Inverkeithing, North Queensferry and Dalgety Bay (refer to Figure 7.2). To the south of the Firth of Forth, the main residential communities include the settlements of South Queensferry, Dalmeny, Winchburgh and Kirkliston with smaller communities such as Newton as well as a number of individual cottages and farmsteads.

#### Commercial Activities

- 7.3.3 The main concentration of commercial land use to the north of the Firth of Forth is located around Rosyth, Dunfermline and Inverkeithing. This includes Belleknowes Industrial Estate located just to the east of the A90/M90, Masterton and Pitreavie business parks to the north of the A823(M) and Dunfermline Business Park in Dunfermline. Industrial uses include scrap metal processing operations and also a freight carrier and haulage centre located at Inverkeithing Bay. In addition, the former HS Naval Base at Rosyth, located to the north shore of the Firth of Forth, functions as a commercial port and industrial park. The dockyard is operated by Babcock International and has been selected for the final assembly of the Royal Navy's new Queen Elizabeth Class Aircraft Carriers.
- 7.3.4 South of the Firth of Forth, there is a predominance of agricultural based land use. There are industrial activities located at Newbridge (Newbridge Business Park, Newbridge North Business Park). Eastmains Industrial Estate is located to the south of Winchburgh and Ferry Muir Business Park is located in South Queensferry. Other business uses include small individual retail premises, such as cafés, food shops and newsagents, located within the key settlements described above.
- 7.3.5 The study area also includes a number of notable tourist attractions. Many tourist sites are linked to the heritage of the area and include the internationally recognisable Forth Rail Bridge. There are numerous historic buildings and estates such as Hopetoun House, Niddry Castle and Dundas Castle. Details of specific historic sites are provided in Chapter 14 (Cultural Heritage). Other notable sites of tourist interest include the marine life centre of Deep Sea World, located in North Queensferry.
- 7.3.6 Major open cast mining sites within the study area include Cruiks Quarry to the north of the Firth of Forth, situated west of the M90 at Inverkeithing Bay and Hillwood Quarry located south of Newbridge. There are also a number of former quarries located within 250m of the proposed scheme which are identified on Figure 8.4. South of Winchburgh, the spoil material bing sites of Niddry and Greendykes are remnants of the oil shale industry.
- 7.3.7 Other industries that operate within the study area include fisheries and marine based activities. Port Edgar Marina to the immediate west of South Queensferry comprises several small units which include the Marina Office, Port Edgar Yacht Club, HM Coastguard, various sailing and marine based businesses, a cafe and metal works. The only known commercial fishing activities within the study area are static gear vessels; consultation with the Scottish Fisheries Protection Agency (SFPA) indicated that there are three static gear vessels that fish in and around the Forth Road and Rail Bridges. Each of the static gear vessels work between 100 and 200 creels and fish mainly brown crab, lobster, velvet crab and to a much lesser degree dog whelks. The main creel fishery areas are located around Beamer rock and to a lesser extent the Forth Rail Bridge. The vessels are based in Port Edgar, Newhaven and Rosyth Ports.

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- 7.3.8 Beyond the study area, the Firth of Forth also supports three shellfisheries, the nearest at Granton is approximately 10km downstream of the Forth Road Bridge. Other fishing activities known to operate in the Firth of Forth include lobster (*Nephrop*) trawlers, which SFPA has indicated are at least 10km downstream of the Forth Road Bridge.

#### Transport Infrastructure and Public Utilities

- 7.3.9 The Forth Road Bridge is one of three road bridges that carry vehicle traffic across the Firth of Forth. The other two bridges (Kincardine and Clackmannanshire) are located at Kincardine, approximately 20km upstream of the Forth Road Bridge. The Forth Road Bridge forms part of the A90 and connects northwards to the M90 towards Perth, providing an important link towards the north of Scotland. South of the Firth of Forth the A90 passes through South Queensferry and provides links east, forming part of the link road around Edinburgh. The A90 also connects onto the M9 spur, providing access to the west of Scotland via the M8 and M9.
- 7.3.10 The Forth Rail Bridge, located to the east of the Forth Road Bridge, is the only rail line connection over the Firth of Forth. It forms part of an important rail link from Aberdeen to Edinburgh. From Edinburgh, passengers can transfer onto the high speed East Coast Main Line which provides a strategic rail line to London. The railway track runs south from Inverkeithing, passing close to the A90 into North Queensferry and over the Forth Railway Bridge towards Dalmeny. There a number of railway stations located within the nearby settlements of Dalmeny, North Queensferry, Inverkeithing, Dalgety Bay, Rosyth and Dunfermline. Non-rail transport facilities include Ferrytoll Park and Ride which is located off the M90 at Ferrytoll Junction and serves people commuting into Edinburgh.
- 7.3.11 Utilities within the study area include Dunfermline Wastewater Treatment Work (WWTW) located to the north of the Firth of Forth and also South Queensferry and Dalmeny WWTWs to the south. Scottish Water operates the WWTWs, as well as a number of pumping stations and supporting infrastructure which includes a wastewater pumping station and also storm outfall headworks at Port Edgar. The storm outfall discharges into the Firth of Forth and is located between the proposed scheme and Port Edgar Marina.
- 7.3.12 There is a strategic utility pipeline which runs approximately west to east through agricultural land to the south of South Queensferry, and would be crossed by the proposed scheme at certain locations. There is also a large oil storage depot at Dalmeny.
- 7.3.13 The Firth of Forth itself is also an important communication route, with shipping serving major ports at Rosyth, Burntisland and Methil on the northern shore and also Grangemouth and Leith on the southern shore. All are operated by the Forth Ports Authority and are located downstream of the proposed Main Crossing with the exception of Rosyth and Grangemouth. Grangemouth, located approximately 20km upstream of the Forth Road Bridge, is the largest container port in Scotland and Scotland's only oil refinery. Major industrial uses downstream include a fabrication yard at Burntisland which provides facilities for the offshore oil and gas industry, a woodpulp and timber distribution centre at Methil and also cargo handling centre at Leith. Leith Port is the largest enclosed deepwater port in Scotland and can also accommodate recreational cruise vessels. , Ferry services operate regularly from Rosyth Port to Zeebrugge in Belgium.
- 7.3.14 There are two main navigation channels in the Firth of Forth that are used for shipping activities. The Forth Deep Water Navigation Channel passes under the centre of the Forth Road Bridge and has the highest frequency of shipping traffic. The Rosyth Navigation Channel passes below the Forth Road Bridge further north but has a much lower volume of shipping traffic. The Forth Ports Authority has also confirmed that cruise ships travelling along the Firth of Forth anchor near the Forth Rail Bridge, to the west of Inch Garvie Rock.
- 7.3.15 Other notable activities include the Defence Munitions Centre and deep water explosives handling jetty at Crombie Pier, located approximately 10km upstream of the Forth Road Bridge. There is a tanker terminal approximately 5km downstream at Braefoot Bay which provides the base for the

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export of liquefied petroleum gas. An offshore tanker berth and oil handling facility is located at Hound Rock (approximately 3km west of the Forth Road Bridge), enabling North Sea oil to be piped to the storage facility at Dalmeny. There are also numerous smaller harbours and marinas used by both commercial and private recreational transport vessels within the study area, including a harbour at Inverkeithing as well as marinas at Dalgety Bay, North and South Queensferry, Hawes Pier, and Port Edgar.

#### Community Land

- 7.3.16 The majority of community land in the study area is of low sensitivity as it is assessed as being of local importance. The only exception relates to Hope Street Cemetery at Inverkeithing which is considered to be of high sensitivity. Community land was considered in terms of both designated and informally used areas.

#### Designated Areas for Community Recreation/Amenity

- 7.3.17 Areas of community land include parks, playing fields and greenspaces located in the key settlements identified in paragraph 7.3.2 above. These areas are designated Open Space and protected for use by local communities in the Fife, Edinburgh City and West Lothian Council Local Plans. Chapter 17 (Pedestrians, Cyclists, Equestrians and Community Effects) provides details of parks and other areas of open space within these settlements, as well as equestrian routes, cycleways and local paths that cross these areas. Areas of particular relevance to the land use assessment include the playing fields associated with Kirkliston Leisure Centre, located immediately to the east of the M9 Spur at M9 Junction 1A. Although the leisure centre is publicly operated by Edinburgh Leisure it is also considered as a business. However, as the primary function is as an area of public amenity the playing fields are considered in the assessment of community land.
- 7.3.18 There are a number of woodland areas within the study area (refer to Figure 10.2). These include three Community Woodlands to the south of the Firth of Forth. These comprise Echline and Ferry Glen Community Woodlands located in South Queensferry, and also Pikes Pool Woodland within Kirkliston. They are maintained by local volunteers with some support from the City of Edinburgh Council. As shown in Figure 7.2, Echline and Pikes Pool woodlands are located within designated Open Space and Ferry Glen is bordered by Open Space to the north.

#### Informal Areas for Community Recreation/Amenity

- 7.3.19 In addition to the formal recreation areas and activities, it is recognised that much of the coastline and surrounding area is of high scenic value and represents informal recreation areas. As indicated in section 7.1 and discussed in Chapter 17 (Pedestrians, Cyclists, Equestrians and Community Effects), the Land Reform Act (Scotland) 2003 establishes statutory rights of responsible access on and over most land, including inland water.
- 7.3.20 A series of footpaths and trails provide access to coastal and countryside walks both north and south of the Firth of Forth. Consultation with local community councils has confirmed the amenity value of a number of these areas, in particular the foreshore around North Queensferry, St. Margaret's Marsh as well as the fields to the north of the B924 and the west of South Queensferry.
- 7.3.21 In addition, Dundas Castle Golf Club is located to the south of Dundas Castle. Although not designated as Open Space, the golf course it is a formal recreation area that is available for private members.
- 7.3.22 Other specific locations where informal recreation has been noted during the site surveys include the triangular area of mixed woodland to the south of Linn Mill Burn which is used as a mountain bike trail. The woodland strip north of Niddry Mains also is used for mountain biking and trails and jumps have been built. The area of woodland adjacent to the Dolphington Burn which is used for

recreation by a paintball company. Hope Street Cemetery, located immediately east of the A90 on the edge of Inverkeithing, is also considered to be an area of community land.

Educational and Community Facilities

7.3.23 A summary of any buildings identified as used for educational and community facilities is provided in Chapter 17 (Pedestrians, Cyclists, Equestrians and Community Effects). The majority of facilities are focused in the larger settlements such as Dunfermline, Inverkeithing and South Queensferry.

Recreational Use of Firth of Forth and Water Courses

7.3.24 The Firth of Forth is utilised as a recreational resource by a number of marinas and sailing clubs both north and south of the Firth of Forth. As indicated above, there are a number of ports, harbours and marinas used by cruise ships as well as smaller private vessels.

7.3.25 North of the Firth of Forth is the Dalgety Bay Sailing Club. Although outside the study area, this club is only 5km east of the Forth Rail Bridge and provides access to the Firth of Forth for recreational activities such as dinghy sailing and yachting. The club also organises yearly regattas during the summer months. In addition, the North Queensferry Boat and Sports Club, located on Ferry Road in North Queensferry, allows for similar access and activities on the Firth of Forth.

7.3.26 South of the Firth of Forth, the Port Edgar Marina located to the west of South Queensferry also provides access to the Firth of Forth for recreational activities. A series of classes and activities such as sailing, power boating, canoeing, dinghy sailing and raft building are run by Edinburgh Leisure which manages leisure and recreational facilities for the City of Edinburgh Council. There are also yearly regattas during the summer months.

7.3.27 There are a number of other watercourses/ waterbodies within the study area. These are identified on Figure 9.1. Consultation and surveys have confirmed the presence of three freshwater streams/rivers within the study area that support recreational fishing: Niddry Burn, the River Almond and Swine Burn. These watercourses are all located near M9 Junction 1A and support the angling of species such as Atlantic salmon, sea trout, brown trout. Humble Reservoir, located in the southern study area, is also used for recreational fishing. There are a number of angling clubs and organisations known to operate in Fife and the Lothians which may have activities based in the study area.

**Development Land**

7.3.28 Planning allocations are included in the development plans covering Fife, the City of Edinburgh and West Lothian Councils areas. Table 7.7 identifies the relevant Structure and Local Plans that make up the development plan:

**Table 7.7: Development Plans**

Document	Title	Status
Structure Plans	Finalised Fife Structure Plan 2006 - 2026 Scottish Government Final Modifications May 2009	Approved May 2009
	Edinburgh and the Lothians Structure Plan 2015	Adopted June 2004
Local Plans	Dunfermline and the Coast Local Plan	Adopted April 2002
	West Lothian Local Plan	Adopted January 2009
	Rural West Edinburgh Local Plan	Adopted June 2006
	Rural West Edinburgh Local Plan Alteration	Approved for Consultation Purposes October 2008

7.3.29 In local plans local authorities can allocate land for future development. A number of planning allocations relating to development land have been identified within the study area. These are summarised in Table 7.8 and are also indicated on Figure 7.2.

**Table 7.8: Development Plan Allocations**

Development Plan	Status of Plan	Development Plan Allocation	Location
Dunfermline and the Coast Local Plan	Adopted	S11, Brownfield Site (Former Oil Fuel Depot)	Rosyth Waterfront
		S12, Brownfield Site (East Tip)	Rosyth Waterfront
		S14, Brownfield Site (Roods)	Inverkeithing
		S16, Brownfield Site (Dunfermline Wynd)	Inverkeithing
		S17 Belleknowes Industrial Estate	Inverkeithing
West Lothian Local Plan	Adopted	CDA 8 Winchburgh Core Development Area	Winchburgh
		TRAN 28, New Motorway junction on M9 associated with CDA8	Winchburgh
		EM 5, Employment Allocation, Newton North	Newton
Rural West Edinburgh Local Plan	Adopted	ENV 6, Environmental Improvement, Springfield Road	South Queensferry
		HSG 6/ECON 10 Port Edgar, mixed use development.	South Queensferry
		HSG 7 Housing Allocation, Society Road	South Queensferry
		HSG 2, Housing Allocation, Springfield Road.	South Queensferry
		HSG 5, Housing Allocation, Stewart Terrace	South Queensferry
		ECON 1, Employment Allocation, South Scotstoun	South Queensferry
		ECON 2, Employment Allocation, Ferry Muir	South Queensferry
		ECON 7, Employment Allocation, Newbridge North	Newbridge
		HSP 1, Strategic Housing Allocation, Kirkliston North	Kirkliston
		HSP2, Strategic Housing Allocation Main Street West, Kirkliston.	Kirkliston
		HSP 3, Strategic Housing Allocation, Kirkliston Distillery	Kirkliston
Rural West Edinburgh Local Plan Alteration	Approved for Consultation Purposes	HSP 8, Strategic Housing Allocation, Former Continental Tyres Site North, Newbridge	Newbridge
		HSP 9, Strategic Housing Allocation, Former Continental Tyres Site South, Newbridge	Newbridge

7.3.30 An overview of the development plan allocations is provided below.

#### Dunfermline and the Coast Local Plan

7.3.31 At the former HM Naval Base at Rosyth, land and premises located to the north of the Firth of Forth are being released in several new business parks and there are major brownfield opportunities for further business expansion. The Scarborough Muir Group currently own a major part of the Rosyth waterfront including two major brownfield sites (S11 and S12). The group promoted the development of the area for residential, business, commercial and leisure uses through the Fife Structure Plan review. Scottish Ministers rejected the residential element of the proposal in December 2008, however some limited leisure development linked to the Rosyth-Zeebrugge (Belgium) ferry terminal may be permitted.

7.3.32 Brownfield Site Policy BE7 relates to the reuse of a number of brownfield sites. This includes an area located within Belleknowes Industrial Estate, Inverkeithing (site S17), the former Oil Fuel Depot (site S11) and East Tip (site S12) at Rosyth waterfront. Two smaller sites have been identified in Inverkeithing, namely Roods (site S14) and Dunfermline Wynd (site S16).

#### West Lothian Local Plan

7.3.33 The Winchburgh Core Development Area (CDA8) is an allocation for a major mixed-use development comprising residential (5,500 dwellings), employment (40ha minimum), community and town centre facilities, primary and secondary schools and infrastructure which includes a public

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transport interchange. Allocation TRAN 28, although outside the 600m study area, is an allocation for a new junction on the M9 to the northeast of Winchburgh and is required to facilitate this development. An outline planning application (ref.1012/P/05) was lodged with West Lothian Council in 2005 for determination to take this development forward. Consultation with West Lothian Council confirmed that the authority is expecting to grant outline planning permission in the summer of 2009.

- 7.3.34 Newton North (EM5) is situated to the West of South Queensferry and comprises the former Digital plant. It was recently purchased by Balfour Beatty Rail division. The site was included in the West Lothian Local Plan as an employment area which encourages retention for business, general industrial, storage and distribution uses (use classes 4, 5 and 6).

#### Rural West Edinburgh Local Plan

- 7.3.35 Allocations at Springfield Road, South Queensferry (HSG2 and ENV 6) are for residential development with associated environmental improvements to create recreational open space. This site was purchased by Scottish Ministers to safeguard the area of land required for the bridgehead. The site has detailed planning consent for residential development of 150 units with associated open space and infrastructure. Permission was granted in 1994 and a test road was constructed in 1999. The City of Edinburgh Council undertook a legal review in 2000 which concluded that the development had started and that the consent remains valid.
- 7.3.36 Port Edgar (HSG6/ECON10) lies immediately east of the proposed scheme and is allocated for mixed-use development including marina uses, related businesses and housing. The development is the subject of a separate Development Brief which has recently been adopted (September 2008). To date no planning applications have been submitted and the City of Edinburgh Council has confirmed in March 2009 that due to the economic climate it is not expecting to appoint a contractor or submit an application within the next 12-18 months.
- 7.3.37 Society Road (HSG 7), is located immediately west of Port Edgar (HSG6/ECON10) and is allocated for residential use. This site relates to the barracks at Port Edgar which have been listed as Category 'B' after the Local Plan was adopted. At present the barracks are used for storage and no applications have been submitted to seek consent for conversion to residential use.
- 7.3.38 Located immediately east of the Forth Road Bridge is Stewart Terrace (HSG5). This site forms part of the established housing land supply and has a capacity of around 117 units. To date the site has not been developed. Planning applications to develop the site for residential purposes were submitted in 2002 and 2003 but these were withdrawn and dismissed on appeal. No further applications to develop the site have been submitted since these decisions.
- 7.3.39 South Scotstoun (ECON1) is allocated in the local plan for business use and is a previous allocation which has been carried forward and is part of the established employment land supply.
- 7.3.40 Ferry Muir (ECON 2): Policy ED1 of the local plan states that this site is safeguarded for business (class 4), general industry (class 5) or storage and distribution (class 6) uses. The northern part of the site has already been developed and contains a supermarket, petrol filling station, two restaurants, a hotel and some offices. Public consultation was undertaken in the summer of 2008 in relation to the southern part of the site for the development of a residential nursing home. An application has been submitted on the 04 March 2009 seeking outline approval for the development of flats, residential care home and ancillary facilities.
- 7.3.41 Kirkliston North (HSP 1): this greenfield site has been designated for the development of 610 housing units and applications for parts of the site have been submitted to take development forward. Policy H2 of the Local Plan states that development of the site shall not commence before the West Edinburgh tram to Newbridge is completed and operational. However, currently no timescale has been agreed for the development of this part of the tram system. The Stirling Road site (HSP 2) is allocated for 90 residential units however, development of this site has now been



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completed. The Kirkliston Distillery allocation (HSP 3) was designated by City of Edinburgh Council for residential use with a set unit capacity of 60 units. Two applications to develop the site for such a land use, including the conversion of existing buildings on site were granted in August and October 2008.

7.3.42 HSP 4 is a strategic housing allocation on the former Nursery site in Newbridge. It has been outlined for the development of 25 housing units within the local plan. An outline planning application for residential development of the site was approved in 2006, but no further applications have been submitted since, and thus no development has occurred.

7.3.43 Newbridge North (ECON 7) is identified as an opportunity to provide a high quality modern business park. In February 2002, a report was approved recommending that consent be granted for the development of a business park with ancillary uses. A masterplan was subsequently submitted and approved and now several 'reserved matters' applications have been submitted and some have been granted consent

#### Rural West Edinburgh Local Plan Alteration

7.3.44 The alterations to the Local Plan re-designated the economic development site ECON 8 into the two strategic housing allocations, HSP 8 and HSP 9 with unit capacities of 150 and 350 respectively. An outline application for residential development on the entire site was submitted in October 2007 and is still pending consideration by City of Edinburgh Council.

#### Planning Applications

7.3.45 A number of planning applications have been identified within the study area. These are summarised in Appendix A7.5 and are shown on Figure 7.2. Other applications that fall outside the study area but are notable in providing a general context to the assessment include a park and choose facility at Rosyth and applications for business development at Rosyth waterfront and Newbridge.

### **Agricultural, Forestry and Sporting Interests**

#### General Context

7.3.46 The land in the study area, particularly to the south of the Firth of Forth where there is a predominance of prime quality agricultural land, is potentially some of the most productive in Scotland. The soil type, climate and topography combine to produce fertile, prime agricultural land capable of producing a wide range of crops with high yields. Consequently, the area is important in supporting Scotland's combinable crop (wheat, barley and oilseed rape) as well as potato and vegetable sectors.

7.3.47 The requirement to notify Scottish Ministers of applications affecting prime agricultural land was withdrawn in October 2002. However, Scottish Planning Policy (SPP)15: Planning for Rural Development states that prime quality agricultural land should continue to be protected and only used to meet strategic development objectives. National guidance also emphasises the importance of the preservation of soil quality. The Scottish Soil Framework: A Consultation Document (Scottish Government, 2008) promotes the sustainable management and protection of soils for a range of functions which include food production, biodiversity, regulating water flow and quality.

#### Land Use and Land Capability

7.3.48 Land quality characteristics within the study area vary. The land within the northern study area is less rural in character than that in the southern study area due to increased density of settlements and industry. Generally, the agricultural land is of lower quality and includes areas of non-prime land. Whilst arable farming is present, it is of a less intensive nature. In the southern study area,

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there is a predominance of prime quality (LCA Class 2 and 3.1) arable land. Arable farming is the predominant form of agriculture in the southern study area reflecting the quality of land available

7.3.49 A full description of the land capability assessment can be found at Appendix A7.4. Figure 7.1 presents the indicative land capability for agriculture classification for all agricultural land affected by the proposed scheme in accordance with MLURI data and verified by on-site assessments.

7.3.50 There are a number of mature broadleaf woodlands including those around Ferrytoll (Castlandhill Woods) in the northern study area and around Dundas Castle in the southern study area. Figure 9.1 presents the classification of habitats in the study area and identifies areas of woodland.

#### Identified Agricultural, Forestry and Sporting Interests

7.3.51 A total of 15 land interests were identified in the northern and southern study areas. The total combined area of the land interests potentially directly affected by the proposed scheme is approximately 2820ha. The locations of these land interests are shown in Figure 7.1.

#### *Agriculture*

7.3.52 The range of agricultural activity is predominantly based on intensive arable farming systems. There are no known organic units.

#### *Forestry*

7.3.53 Compartments of commercial forestry and farm woodland are located within the study corridor of the proposed scheme. There is no land owned or managed by the Forestry Commission that would be crossed by the proposed scheme.

#### *Sporting*

7.3.54 Sporting activity occurs within the southern study area. This is limited to pheasant shooting and stalking of roe deer, which are prevalent around woodland areas.

#### Sensitivity Assessment

7.3.55 The baseline data collected during the survey were used to give an individual sensitivity assessment for each land interest affected by the project (refer to Figure 7.1). The sensitivity assessments for each land interest can be found below in Table 7.9.

**Table 7.9: Sensitivity Assessment**

Land Interest	Agricultural/Sporting//Forestry Activity	Sensitivity
<b>Northern Study Area</b>		
Land Ref 33, St. Margaret's Hope (Field Ref 33/1)	<ul style="list-style-type: none"> <li>• Low value scrub and moderate value woodland.</li> <li>• No environmental agreement.</li> <li>• No sporting activity.</li> </ul>	Medium
Land Ref 34, Queensferry Hotel (Field Ref 34/1)	<ul style="list-style-type: none"> <li>• Low value scrub and medium value woodland.</li> <li>• No environmental agreement.</li> <li>• No sporting activity.</li> </ul>	Medium
Land Ref 27, Castlandhill Wood (Field Ref 27/1)	<ul style="list-style-type: none"> <li>• Moderate value woodland.</li> <li>• No environmental agreement.</li> <li>• No sporting activity.</li> </ul>	Medium
Land Ref 30 and 42, Castlandhill Farm and Broomhall Estate. (Field ref 30/1-3 and 42/1-2)	<ul style="list-style-type: none"> <li>• Large farm size. Conventional, arable based farming systems of high intensity. Crops grown include winter and spring cereals, oilseed rape, beans and set-aside. No livestock.</li> <li>• Land farmed subject to environmental agreements.</li> <li>• No sporting activity.</li> </ul>	Medium

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Land Interest	Agricultural/Sporting//Forestry Activity	Sensitivity
	<ul style="list-style-type: none"> <li>• Prime and non-prime land.</li> <li>• Moderate value woodland.</li> </ul>	
Land Ref 36, St. Margaret's Marsh (Field Ref 36/1)	<ul style="list-style-type: none"> <li>• Low value scrub – land not in agricultural use.</li> <li>• No environmental agreement.</li> <li>• No sporting activity.</li> </ul>	Low
Land Ref 41, Ferrytoll Grazing (Field Ref 41/1)	<ul style="list-style-type: none"> <li>• Grassland but land not in regular agricultural use. Not a commercial farm.</li> <li>• No environmental agreement.</li> <li>• No sporting activity.</li> <li>• Prime land.</li> </ul>	Low*
Land Ref 42, Broomhall Estate (McMenamin Grazing) (Field Ref 42/3)	<ul style="list-style-type: none"> <li>• Land not in regular agricultural use.</li> <li>• No environmental agreement.</li> <li>• No sporting activity.</li> <li>• Non-prime land.</li> </ul>	Low
<b>Southern Study Area</b>		
Land Ref 1, 6, 9 and 23, Dundas Estate (Field Ref 1/1-3, 6/1-8, 9/1, 23/1-3)	<ul style="list-style-type: none"> <li>• Large farm size. Conventional arable based farming systems of high intensity. Crops grown include winter and spring cereals and potatoes. No livestock.</li> <li>• Land farmed subject to environmental agreements.</li> <li>• Driven pheasant shooting.</li> <li>• Prime and non-prime land.</li> <li>• Moderate value woodland.</li> </ul>	High
Land Ref 3 and 22, Dundas Mains (Field Ref 3/1-7, 22/1)	<ul style="list-style-type: none"> <li>• Medium farm size. Conventional arable based farming systems of high intensity. Crops grown include winter and spring cereals. No livestock.</li> <li>• No environmental agreements.</li> <li>• No sporting activity.</li> <li>• Prime land.</li> <li>• High value woodland.</li> </ul>	High
Land Ref 44, Rosebery Estates (Group of Estates that includes Dalmeny Estate) (Field Ref 44/1-6)	<ul style="list-style-type: none"> <li>• Large farm size. Conventional predominantly arable based farming systems of high intensity. Crops grown include winter and spring cereals and potatoes. A flock of breeding ewes also reared.</li> <li>• Medium value woodland</li> <li>• No environmental agreements.</li> <li>• Commercial driven shooting.</li> <li>• Prime and non-prime land.</li> </ul>	High
Land Ref 7, Humbie Farm (Field Ref 7/1-5)	<ul style="list-style-type: none"> <li>• Large farm size. Conventional arable based farming systems of high intensity. Crops grown include winter and spring cereals and oilseed rape. Although no livestock are owned by the business cattle courts are let out and cattle occasionally graze on permanent grass paddocks.</li> <li>• Land farmed subject to a Land Management Contract.</li> <li>• No commercial sporting activity. Private shooting only.</li> <li>• Prime land.</li> </ul>	High
Land Ref 15, Overton Grazing (Field Ref 15/1 -2)	<ul style="list-style-type: none"> <li>• Small farm size. Conventional grazing livestock based farming system of moderate intensity.</li> <li>• No environmental agreement.</li> <li>• No sporting activity.</li> <li>• Prime land.</li> </ul>	High
Land Ref 11 and 16, Newliston Estate (Field Ref 16/1, 11/1-9)	<ul style="list-style-type: none"> <li>• Large farm size. Conventional arable based farming systems of high intensity.</li> <li>• Prime and non-prime land.</li> <li>• Moderate value woodland</li> </ul>	High
Land Ref 18, Wimpey Homes Holding Ltd (Field Ref 18/1-2)	<ul style="list-style-type: none"> <li>• Low value scrub – land not in agricultural use.</li> <li>• No environmental agreements.</li> <li>• No sporting activity.</li> </ul>	Low

Land Interest	Agricultural/Sporting//Forestry Activity	Sensitivity
Land Ref 17, Land South of South Queensferry (Field Ref 17/1)	<ul style="list-style-type: none"> <li>• Low value scrub – land not in agricultural use.</li> <li>• No environmental agreements.</li> <li>• No sporting activity.</li> </ul>	Low

\* Note: Although there are areas of prime land present, it is not operated as a commercial farm therefore the overall sensitivity is considered to be low.

7.3.56 Of the 15 land interests identified, seven were assessed as high, three as medium, and five of low sensitivity.

7.3.57 The seven high sensitivity land interests include one arable farm to the north of the Firth of Forth and six predominantly arable farms to the south of the Firth of Forth. The three medium sensitivity holdings comprise mainly scrub and medium value woodland. The remaining five low sensitivity holdings comprise primarily non-prime land, supporting scrub land which is not in agricultural use.

## 7.4 Potential Impacts

### Introduction

7.4.1 Potential impacts on land use have been identified for the study area and are discussed below. These are assessed in the absence of mitigation, with residual impacts taking account of mitigation identified in Section 7.6.

### Residential and Commercial Land

#### North of the Firth of Forth

7.4.2 The proposed scheme offers benefits over the longer term from the improved transport connections and operational efficiency in comparison to the baseline Do-Minimum. Transportation and economic assessment of the proposed scheme (reported in detail in the DMRB Stage 3 Scheme Assessment Report) indicates that the proposed scheme will significantly reduce congestion and disruption compared to the baseline Do-Minimum. This will be of particular benefit to businesses in the area that rely on visitors or customers travelling by road.

7.4.3 The proposed scheme would not result in any property demolitions. Six commercial premises would be affected by land-take. Potential land-take impacts would be significant (Moderate or above) for three businesses (Deep Sea World, the Queensferry Hotel and Scottish Water – Dunfermline WWTW). Table 7.10 outlines the potential land take impacts on residential and commercial properties to the north of the Firth of Forth. Appendix A7.2 considers the potential impacts on business viability.

7.4.4 For all businesses to the north of the Firth of Forth, business viability impacts (assessed in accordance with the categories identified in paragraph 7.2.30) are neutral, with the exception of Deep Sea World, the Queensferry Hotel and Stagecoach (Ferrytoll Park and Ride), which are summarised below. For the Dunfermline WWTW, land-take would result in a change in the existing access arrangements but this is not expected to affect the viability of the business.

- Deep Sea World: land-take would result in the loss of the overspill car park (refer to Figure 7.1) used by this business. The main car park and operational area used by this business would not be affected. There is a risk that without an overspill car park, the business would not be able to derive full benefit from the improved accessibility offered by the proposed scheme as the loss of parking facilities could limit business activities during busier periods. Potential impacts on business viability, in the absence of suitable alternative parking provision, are assessed as adverse. The impact would be beneficial if alternative parking provision is found, due to the improved accessibility.
- Queensferry Hotel: it is considered that the number of patrons could be reduced as a result of the potential disruption during construction, and also changes in access and the visibility of the

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hotel during operation of the proposed scheme. It should be noted that there is potential for impacts during construction to be offset by business generation from construction workers. However, due to uncertainty regarding the level of benefit that could be expected this has not been predicted or assessed to ensure a worst-case assessment. The potential impact is assessed as being adverse.

- Stagecoach (Ferrytoll Park and Ride): Impacts on viability are assessed to be beneficial for this business as the proposed scheme would allow the Forth Road Bridge to become a dedicated traffic corridor for public transport.

**Table 7.10: Potential Land Take Impacts on Residential and Commercial Land North of the Firth of Forth**

Receptor	Land Use	Potential Impact (unmitigated)			
		Land-take	Sensitivity	Magnitude	Significance
Catering Van* (mobile snack bar)	Commercial	100%	Medium	Negligible	Negligible/Slight
Deep Sea World (tourist attraction) overspill car-park	Commercial	100%	Medium	High	Moderate/Substantial
Kapital Corporation, St Margaret's Hope * (also known as Admiralty House) (business enterprise)	Commercial	58%	Medium	Negligible	Negligible/Slight
Queensferry Hotel (hotel)	Commercial	18%	Medium	Medium	Moderate
Scottish Water - Dunfermline WWTW (utility)	Commercial	36%	Medium	Medium	Moderate
Stagecoach - Ferrytoll Park and Ride (car park for Park & Ride)	Commercial	13%	Medium	Low	Slight

\*The magnitude of impact on these receptors is reduced to negligible as the leases of the land on which they operate are due to expire prior to the start of construction and tenants would not be affected by potential land-take impacts.

#### South of the Firth of Forth

- 7.4.5 To the south of the Firth of Forth, the proposed scheme would result in permanent land-take from one residential property; Inchgarvie House. Although the loss of 11% of land would be a low magnitude impact in accordance with the criteria in Table 7.2, professional judgement was used to revise this to a medium magnitude impact, reflecting the proximity of the Main Crossing structure to the property and the consequent potential adverse effect in terms of amenity of the remaining gardens. This results in a Moderate significance potential impact. A permanent servitude right over an additional 11% (approximately 0.03ha) of gardens would also be required to allow for maintenance access during operation of the Main Crossing, although land use would be unchanged. Surrounding land requirements could also potentially affect the access to this property in the absence of mitigation.
- 7.4.6 Five commercial properties would be affected by land take, two of these potential impacts are significant (i.e. Moderate or above). Table 7.11 summarises the potential land take impacts on the residential and commercial properties to the south of the Firth of Forth.
- 7.4.7 Appendix A7.2 considers the potential impacts on business viability. The impacts on the viability of all businesses assessed to the south of the Firth of Forth would be neutral.

**Table 7.11: Potential Land-take Impacts on Residential and Commercial Land South of the Firth of Forth**

Receptor	Land Use	Potential Impact (unmitigated)			
		Land-take	Sensitivity	Magnitude	Significance
Inchgarvie House (includes 10 flats)	Residential	11%	Medium	Medium	Moderate
Inchgarvie Lodge (Ken Kirkcaldy Architects)	Residential & commercial	0% (No permanent land-take)	Medium	Negligible	Negligible/Slight
Dundas Castle	Commercial	9%	Medium	Low	Slight
Ove Arup and Partners Scotland Ltd (engineering consultancy)	Commercial	23%	Medium	Medium	Moderate
National Museums Scotland - Port Edgar Barracks (collections storage)	Commercial	0% (No permanent land-take)	Medium	Medium	Negligible/Slight
Scottish Water - South Queensferry WWTW (utility)	Commercial	23%	Medium	Medium	Moderate

Indirect Socio-economic Impacts

7.4.8 In addition to the direct land-take impacts described above, the proposed scheme may also have wider adverse or beneficial indirect impacts. As noted in paragraph 7.4.2 above, the provision of a reliable crossing over the Firth of Forth is expected to provide significant improvements in accessibility in comparison to the baseline Do-Minimum, benefiting many local businesses and also the wider national economy of Scotland. Where a reduction in traffic on local roads would occur this could have adverse impacts for businesses that are reliant on passing trade, or beneficial impacts for those where access may be currently adversely affected by high traffic flows. Transportation and economic assessment of the proposed scheme is reported in detail in the DMRB Stage 3 Scheme Assessment Report. Indirect impacts on marine-based businesses relate mainly to construction impacts (refer to Chapter 19: Disruption due to Construction). Although the Main Crossing works would temporarily disrupt fishing activities in this area (including creel fishing around Beamer Rock), no permanent impacts are anticipated once the proposed scheme is completed.

**Community Land**

North of the Firth of Forth

7.4.9 To the north of the Firth of Forth, no designated Open Space would be affected. The proposed scheme would have a Negligible/Slight impact on informal amenity areas at St. Margaret's Marsh SSSI and a Slight/Moderate impact on Hope Street Cemetery due to land-take from the cemetery at the edge of the A90 embankment. It should be noted that it is anticipated that land within St Margaret's Marsh would be acquired for the proposed scheme, to enable commitment to a management strategy for this SSSI. The land use would not be affected and thus is not considered further in this assessment.

South of the Firth of Forth

7.4.10 To the south of the Firth of Forth, the proposed scheme would impact on some small areas of designated Open Space including land on the perimeter of Kirkliston Leisure Centre, areas to the south west of Kirkliston and land to the east of Standingstone Road. There would also be some land-take of Open Space and informal amenity areas to the west of South Queensferry. All potential impacts are of Negligible/Slight significance with the exception of impacts on fields to the west of South Queensferry where there is a Slight/Moderate impact on designated Open Space and a Moderate significance impact on an informal recreation area.

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- 7.4.11 Table 7.12 outlines the potential impacts on Community Land. In addition, there would also be some very small sections of woodland affected by the proposed scheme including Castlandhill Woods to the north of the Firth of Forth and the Echline Strip of Woodland to the south. These areas are primarily of commercial concern and are discussed further in the agricultural assessment.
- 7.4.12 The operation of the proposed scheme is not expected to impact the recreational use of the Firth of Forth and other watercourses in the study area. Although some inevitable disruption to recreational users is anticipated during the construction of the proposed scheme due to increased vessel movements on the Firth of Forth, as discussed in Chapter 19 (Disruption Due to Construction), access to local ports and marinas would be maintained.

**Table 7.12: Significance of Potential Loss of Land Used by the Community**

Name of Land Area	Type	Description of Impact	Potential Impact (unmitigated)		
			Sensitivity	Magnitude	Significance
<b>North of Firth of Forth</b>					
St. Margaret's Marsh SSSI	Marshland used as local recreational space.	Loss of 4% of total area	Low	Low	Negligible/Slight
Hope Street Cemetery, Inverkeithing	Cemetery with public access.	Loss of 13% of total area	High	Low	Slight/Moderate
<b>South of Firth of Forth</b>					
Fields west of South Queensferry	Local recreational greenspace	Loss of 57% of fields used for recreational use by the local community (i.e. fields containing informal footpaths)	Low	High	Moderate
Fields west of South Queensferry and east of the proposed scheme	Open Space designation	Loss of 31% of designated area	Low	Medium	Slight/Moderate
Land adjacent to Kirkliston Leisure Centre	Open Space designation	Loss of 6% of designated area	Low	Low	Negligible/Slight
Land to south west of Kirkliston	Open Space designation	Loss of 6% of designated area	Low	Low	Negligible/Slight
Land to the east of Standingstone road	Open Space designation	Loss of 7% of designated area	Low	Low	Negligible/Slight

#### Development Land

- 7.4.13 No adverse impacts are anticipated on development land to the north of the Firth of Forth.
- 7.4.14 To the south of the Firth of Forth, the proposed scheme would result in potential impacts assessed as adverse for eight development allocations as a result of direct land-take and/or changes in amenity i.e. significant noise and air quality impacts (refer to Chapter 15: Air Quality, and Chapter 16 Noise and Vibration). These development allocations are listed in Table 7.13. Land-take impacts would be very limited (all less than 0.5ha) with the exception of the land required for the southern approach to the Main Crossing (HSG2 and ENV6) where land-take is over 5ha. However, as the details of individual development plots and therefore effects on viability are unknown, as a worse-case any direct land-take is assessed as adverse.
- 7.4.15 Allocations at Springfield Road (HSG2/ENV 6), Newbridge North (ECON 7), Ferrymuir (ECON 2), Kirkliston North (HSP1) and Winchburgh Core Development Area (CDA8) have associated

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planning applications on which the potential impacts of the proposed scheme are assessed as adverse. These applications are listed in Table 7.13.

- 7.4.16 All other impacts on development land are expected to be neutral. Refer to Appendix A7.5 for the full assessment of all development allocations and planning applications which are shown on Figure 7.2.



**Table 7.13: Potential Impacts on Development Land**

Allocation /Planning Application Reference	Proposed Development	Potential Impact (unmitigated)	
<b>Development Allocations</b>			
HSG2, Springfield Road, South Queensferry	Housing development for 150 houses	Direct land-take and changes in amenity	
ENV 6, Springfield Road, South Queensferry	Site for environmental improvement associated with HSG2		
HSP 1, Strategic Housing Allocation, Kirkliston North	Housing Allocation, with estimated capacity of 610 Units	Direct land-take only (no adverse changes in amenity)	
ECON 2, Employment Allocation, Ferry Muir, South Queensferry	Allocation for business development		
ECON 7 – Newbridge North	Allocation for business development		
CDA 8 Winchburgh Core Development Area	Mixed use development, including residential, employment and community uses		
Site HSG7, Society Road, South Queensferry	Housing land allocation		
HSG 6/ECON 10 Port Edgar	Allocation for a mixed use development including Class 4 marina uses, marine businesses and housing	No permanent land-take although changes in amenity	
<b>Planning Applications</b>			
06/05149/OUT, Land Adjacent to Queensferry Road, Kirkliston	Mixed use development	Direct land-take (no adverse changes in amenity)	
08/00529/REM, 2A Kirkliston Road Newbridge	Proposed hotel development with restaurant, public house and leisure facilities		
08/00031/FUL, Land Adjacent To Queensferry Road, Kirkliston	Erection of 176 houses and 36 flats		
08/02002/REM, 2A Kirkliston Road, Newbridge	Proposed road layout including junction details for phase 2		
07/04961/REM, 2A Kirkliston Road, Newbridge	Proposed office development		
07/04254/FUL, Land Adjacent to Queensferry Road, Kirkliston	Infrastructure works for future development		
08/00435/REM, 2A Kirkliston Road Newbridge	Erection of hotel and restaurant/public house		
07/04960/REM, 2A Kirkliston Road, Newbridge	Proposed office development		
07/01358/REM, Land At 9 Edinburgh Road Newbridge	Proposed road layout including junction details and access and egress details for Phase one of site		
1012/P/05, Land around, Winchburgh	Outline planning for a 352ha dev. incl. residential, commercial, industrial, recreation & retail uses, community facilities, landscaping and open space		
09/00490/OUT Ferrymuir, South Queensferry	Proposed mixed use development comprising office use, a care home, residential development, a leisure unit and community facility		
Springfield Road, South Queensferry (HSG2/ENV 6 site)	Detailed Consent for residential development of 150 units with associated open space and infrastructure.		Direct land-take and changes in amenity

**Agricultural, Sporting and Forestry Interests**

7.4.17 The proposed scheme could impact on the scope and scale of agricultural and forestry-based land management activities and the productive and sporting capacity of the land and water within the route corridor. The possible effects could include:

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- permanent loss of land or reduction in agricultural capability due to the proposed scheme and associated works;
- severance of fields;
- access restrictions with changes in routes to and from fields;
- disruption to existing drainage schemes and disruption of provision of water to fields;
- loss of, or gaps in, commercial and amenity forestry, shelterbelts and covers;
- increase of woodland windthrow risk;
- landscape and visual effect of new and exposed woodland edges; and
- changes in permanent and/or seasonal employment patterns due to changes in the scale and nature of agricultural, sporting and forestry enterprises.

7.4.18 The impacts have been assessed for agricultural, sporting and forestry land interests potentially affected by the proposed scheme. Land that is not in active agricultural, sporting or forestry use has been excluded from the assessment. Details of the land-take from these land interest is provided in Table 7.14. The location of these land interests is shown on Figure 7.1.

**Table 7.14: Summary of Potential Impacts – Land Not Actively Managed for Agricultural, Sporting or Forestry Purposes**

Land Reference	Area Lost (ha)
<b>North of Firth of Forth</b>	
Land Ref 42, Broomhall Estate (McMenamin Grazings)	0.4
Land Ref 27, Castlandhill Wood	0.5
Land Ref 41, Ferrytoll Grazing	0.4
Land Ref 36, St. Margaret's Marsh	5.4
Land Ref 34, Queensferry Hotel	5.5
Land Ref 33, St. Margaret's Hope	1.8
<b>South of Firth of Forth</b>	
Land Ref 17, Land south of South Queensferry	0.2
Land Ref 18, Wimpey Homes Holding Ltd	1.2

7.4.19 The potential impacts on active Agricultural, Forestry and Sporting Interests impacts are detailed in Appendix A7.6. The assessment includes the following seven land interests:

7.4.20 Northern study area:

- Land Ref 30 and 42 Castlandhill Farm and Broomhall Estate.

7.4.21 Southern study area:

- Land Ref 1, 6, 9 and 23 Dundas Estate;
- Land Ref 3 and 22, Dundas Mains;
- Land Ref 44, Rosebery Estate;
- Land Ref 7, Humble Farm;
- Land Ref 15 Overton Grazing; and
- Land Ref 16 and 11, Newliston Estate.

7.4.22 A summary of the potential impacts in terms of significance is provided in Table 7.15 below.

**Table 7.15: Potential Impacts on Agricultural, Forestry and Sporting Interests**

	Substantial	Moderate/ Substantial	Moderate	Slight/ Moderate	Slight	Negligible/ Slight	Negligible
Northern Study Area	0	0	0	1	0	0	0
Southern Study Area	3	1	0	1	1	0	0
<b>Total</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>

7.4.23 There are potentially significant impacts (i.e. Moderate or above) for four land interests. These impacts are described in Table 7.16.

7.4.24 The potential impacts on the remaining land interests are of either Slight or Slight/Moderate significance and are summarised in Table 7.17. The potential impacts generally relate to loss of land, severance of fields, loss of access, loss of field boundaries (including fences, hedges and walls), loss of watering points for livestock and disruption to existing field drainage systems.

**Table 7.16: Description of Potential Significant Impacts on Agricultural, Sporting and Forestry Interests**

Land Interest	Description of potential impacts
Land Ref 1, 6, 9 and 23, Dundas Estate	Substantial potential impact. Loss of 42.9ha of arable land of which 20.7ha is LCA Class 2, 19.8ha is LCA Class 3.1 and 2.4ha is woodland. Land-take affects 15 fields and equates to 9% of the farm area. Disturbance to access, field boundaries and field drainage. Land severed by road infrastructure from the main steading and this equates to a total area of 24.4ha.
Land Ref 3, Dundas Mains	Substantial potential impact. Loss of 18.4ha of arable land, of which 16.4ha is LCA Class 3.1, 0.7ha is LCA Class 3.2 and 1.3ha is woodland. Land-take affects 8 fields and equates to 33% of the farm area. Severance of 5.2ha. Disturbance to access, field boundaries and field drainage.
Land Ref 7, Humber Farm	Moderate/Substantial potential impact. Loss of 9.9ha of arable all of which is LCA Class 3.1. Land-take affects 3 fields and equates to 5% of the farm area. No severance. Disturbance to access, field boundaries and field drainage.
Land Ref 15, Overton Grazing	Substantial potential impact. Loss of 0.5ha of LCA Class 3.1 arable land. Land-take affects 2 fields and equates to 35% of the farm area. No severance. Disturbance to access, field boundaries and field drainage.

**Table 7.17: Summary of Potential Non-significant Impacts on Agricultural, Sporting and Forestry Interests**

Significance	Land Reference	Loss of Land		Severance
		Area lost (ha)	% Farmed Area	
Slight/Moderate	Land Ref 16 & 11, Newliston Estate	12.5	3	-
Slight	Land Ref 30 & 42, Castlandhill Farm & Broomhall Estate	6.7	1	-
	Land Ref 44, Rosebery Estate	6.3	<1	-
Slight	None	n/a	n/a	n/a
Negligible/Slight	None	n/a	n/a	n/a
Negligible	None	n/a	n/a	n/a

7.4.25 The main potential impacts on woodland would occur on Castlandhill Woods, Castlandhill Farm, St. Margaret's Hope, Queensferry Hotel, Dundas Estate, Dundas Mains, Rosebery Estate and Newliston Estate. There can be a risk of windthrow in some situations where stands of woodland and forests are felled. Windthrow (uprooting) is the most extreme case of mechanical and physiological damage to trees caused by wind. Shallow rooting trees and dense woodland are more prone to windthrow if suddenly exposed, for example when shelter from other trees is removed through felling. However, given the characteristics of the affected woodlands, a significant windthrow risk is not expected.

7.4.26 Shooting and stalking activities are limited within the vicinity of the proposed scheme. The only potential impacts relate to impacts on shooting activities at Dundas Estate and Rosebery Estate.

## **7.5 Mitigation**

7.5.1 As explained in Chapter 4 (The Proposed Scheme), the proposed scheme design assessed in this chapter was developed through an iterative process to avoid potentially significant impacts where practicable. In terms of land use this has involved early identification of sensitive land uses and consultation with landowners and use of this information to inform aspects such as the refinement of mitigation planting and the alignment and design of the proposed mainline and junctions.

7.5.2 Land-take would occur where it is considered necessary for the purposes of constructing the proposed scheme and/or for associated mitigation measures such as landscape planting (refer to Figure 12.4), and mitigation is proposed in this section to reduce potential impacts where practicable.

### **Residential and Commercial Land**

7.5.3 As noted above, the proposed scheme design team avoids the use of sensitive land, where practicable, including land and buildings occupied by residential users and businesses. In particular, this includes the spacing of the proposed bridge piers which have been designed to avoid potential property demolitions at the Port Edgar Barracks, Inchgarvie House, St Margaret's Hope Gatelodge, and St Margaret's Hope (also known as Admiralty House).

7.5.4 The proposed scheme will also provide alternative access for the following properties where existing access arrangements would be affected:

- St Margaret's Hope (Admiralty House);
- St. Margaret's Hope Gatelodge.
- Dunfermline WWTW;
- Ferrytoll Park and Ride;
- Inchgarvie House;
- Ove Arup and Partners (Scotland) Limited; and
- South Queensferry WWTW.

7.5.5 No specific mitigation has been identified for potential impacts on other commercial interests/businesses, and as indicated in paragraph 7.2.32 the need for any financial compensation would be determined by the District Valuer. However, impacts generally relate to disturbance during construction; all contractors employed to undertake construction of the proposed scheme will be required to carry out construction activities in accordance with the CoCP (refer to Appendix A19.1) which will include measures to avoid and reduce noise, visual and air quality impacts. This for example should help to reduce disturbance to patrons of the Queensferry Hotel.

7.5.6 A Traffic Management Plan will also be implemented and will include measures to reduce potential travel disruption and also ensure that access to businesses is maintained during the works. This for example should help to reduce the risk that customers could be deterred from visiting the attraction due to potential delays.

### **Community Land**

7.5.7 The land-take identified by the Community Land assessment would result in the loss of some informal footpaths. There are no significant impacts on any designated Open Space areas and no exchange land would be provided, however, alternative access would be provided to ensure that

access would be maintained (refer to Chapter 17: Pedestrians, Cyclists, Equestrians and Community Effects for details of specific mitigation).

- 7.5.8 At Hope Street Cemetery land-take is identified at the edge of the A90 embankment. The detailed design would seek to avoid impacts upon any gravestones in this location.

**Development Land**

- 7.5.9 Mitigation measures with respect to development land relate to the inclusion of appropriate screening to mitigate impacts of the proposed scheme on amenity such as noise. These may also provide consequent reductions to impacts on development land. Detailed site specific mitigation, such as the layout of housing to avoid or reduce noise impacts, would need to be considered on an individual basis by developers as part of any future development applications.

**Agricultural, Forestry and Sporting Interests**

- 7.5.10 Mitigation measures with respect to agricultural, sporting and forestry interest have been developed with the aim of protecting the agricultural capability of land and soils and the maintenance of the viability of farming units.
- 7.5.11 Consultation with landowners and tenants is ongoing and it is normal practice for the details of accommodation works to continue beyond the EIA process. However, agreed mitigation measures and accommodation works will be included within the construction contract. Although specific details are unknown at this stage, it is assumed for the purposes of the residual impact assessment, that appropriate mitigation such as field and steading access will be provided.
- 7.5.12 The various mitigation measures to avoid or reduce effects on agricultural, sporting and forestry activities are listed in Table 7.18. Mitigation is considered for each land interest. A series of mitigation measures from this list would be applied on a case-by-case basis for each land interest, depending on the impact and the scope for mitigation. Further details of the mitigation and monitoring requirements are detailed in the CoCP (Appendix A19.1). Details of mitigation measures to be employed on a farm-by-farm basis are detailed for each land interest in Appendix A7.6.

**Table 7.18: Agricultural, Forestry and Sporting Mitigation Measures**

Mitigation Item No.	Mitigation Measure
LU1	Loss of agricultural land and forestry is to be reduced by implementing re-instatement plans i.e. returning land to agricultural use, where appropriate, post construction. Agricultural land is to be re-instated in accordance with the requirements of the Bill. A photographic and video survey is to be undertaken to ensure all land is restored as near to its original state as is reasonably practicable and will be made available to the owner or occupier.
LU2	Access to agricultural land and woodland to be maintained during the construction process and post construction in accordance to the requirements of the Bill.
LU3	Potential for damage to the agricultural capability of soils to be minimised by the adoption of appropriate measures during construction and reinstatement. This includes the careful excavation, storage and replacement of topsoil and subsoil.
LU4	Notice of intention to commence construction work to be given to owners and occupiers of adjacent land along the route before works commence. Consultation with landowners and occupiers will be undertaken when developing the programme of works to reduce disturbance where appropriate and without detriment to the overall programme.
LU5	Provision of temporary fences and lights in appropriate locations during construction for the protection of the health and safety of the public and animals and to avoid trespass. Where appropriate, fencing of the working area is to be to a standard adequate to excluding any stock kept on adjoining land.
LU6	Where boundary features such as fences, walls and hedges have to be removed to allow construction these are to be reinstated with appropriate materials to provide a secure field boundary.
LU7	Where access points require temporary or permanent alteration as a result of construction, alternative access for stock and machinery will be provided as appropriate in consultation with the land owner/ occupier. If required, recessed access to be provided off side roads with loading/unloading area.

Mitigation Item No.	Mitigation Measure
LU8	Reasonable precautions are to be taken during construction to avoid, the spreading of soil borne pests and diseases, animal and crop diseases and invasive species.
LU9	Particular care to be taken to reduce damage or disturbance to field and forestry drainage systems. Laying of new drains to be undertaken to maintain drainage systems during construction. Repairing and reinstatement of field drains affected by construction to be agreed with the land owner/occupier to ensure that land capability is maintained and flooding is not exacerbated. Where appropriate the integrity of the drainage system is to be secured in advance through the installation of header drains (cut off drains) to facilitate construction. All remaining remedial works will be undertaken post construction.
LU10	Water supplies for livestock are to be protected at all times and alternative supplies provided where access is compromised by any works, unless agreed with the landowner.
LU11	Where individual stands of trees are to be affected an appropriate arboricultural assessment will be undertaken pre-construction and appropriate mitigation employed.
LU12	Where there are no windthrow or landscape visual issues, tree felling is to be reduced to that necessary to allow the safe construction and operation of the road.

7.5.13 The majority of the proposed mitigation will relate to the provision of access to fields and severed areas, reinstatement of boundary features (fences, hedges and drystone walls) as well as watering points for livestock, and provision of new or reinstated field drainage systems.

7.5.14 Where possible, land temporarily required for construction will be returned to agricultural use, limiting the agricultural area permanently lost to the proposed scheme. The land interests where there is potential to return land to agricultural use are listed in Table 7.19.

**Table 7.19: Return of Land to Agricultural Use**

Mitigation	Description	Land Reference
Return of land to agricultural use	Return of 8.2ha of land temporarily acquired for construction compound and re-grading of embankments and return to agricultural use.	Land Ref 1, 6, 9 and 23, Dundas Estate
	Return of 3.3ha of land temporarily acquired for construction compound and land with temporary servitude rights.	Land Ref 7, Humber Farm
	Re-grading of embankments and return of 0.2ha of land to agricultural use.	Land Ref 15, Overton Grazing
	Re-grading of embankments and return of 0.8ha of land to agricultural use and land with temporary servitude rights.	Land Ref 16 & 11, Newliston Estate

## 7.6 Residual Impacts

### Residential and Commercial Land

7.6.1 The residual impacts of the proposed scheme on residential and commercial uses are summarised in Tables 7.20 and 7.21.

**Table 7.20: Residual Impacts on Residential and Commercial Land North of the Firth of Forth**

Receptor	Land Use	Residual Impact			
		Land-take	Sensitivity	Magnitude	Significance
Catering Van	Commercial	100%	Medium	Negligible	Negligible/Slight
Deep Sea World (overspill car-park)	Commercial	100%	Medium	High	Moderate/Substantial
Kapital Corporation, St Margaret's Hope*	Commercial	58%	Medium	Negligible	Negligible/Slight
Queensferry Hotel	Commercial	18%	Medium	Medium	Moderate
Scottish Water Dunfermline (WWTW)	Commercial	36%	Medium	Medium	Moderate
Stagecoach (Ferrytoll Park and	Commercial	13%	Medium	Low	Slight

Receptor	Land Use	Residual Impact			
		Land-take	Sensitivity	Magnitude	Significance
Ride)					

**Table 7.21: Residual Impacts on Residential and Commercial Land South of the Firth of Forth**

Receptor	Land Use	Residual Impact			
		Land-take	Sensitivity	Magnitude	Significance
Inchgarvie House (includes 10 flats)	Residential	11%	Medium	Medium	Moderate
Inchgarvie Lodge (Ken Kirkcaldy Architects)	Residential & commercial	0% (No permanent land-take)	Medium	Negligible	Negligible/Slight
Dundas Castle	Commercial	9%	Medium	Low	Slight
Ove Arup and Partners (Scotland) Ltd	Commercial	23%	Medium	Medium	Moderate
National Museums Scotland (Port Edgar Barracks)	Commercial	0% (No permanent land-take)	Medium	Medium	Negligible/Slight
Scottish Water (South Queensferry WWTW)	Commercial	23%	Medium	Medium	Moderate

- 7.6.2 The proposed scheme would not result in any property demolitions.
- 7.6.3 To the north of the Firth of Forth, land-take would result in significant (Moderate or greater) residual impacts for three commercial properties (Deep Sea World, the Queensferry Hotel and Scottish Water – Dunfermline WWTW).
- 7.6.4 For Deep Sea World, it should be noted that the land-take relates to the loss of the overspill car park. The main car park and operational area used by this business would not be affected. The improved accessibility provided by the proposed scheme would have a beneficial effect on this business as customers travelling by car and public transport would find it easier to make the journey. As the provision of a replacement overspill car park does not form part of the proposals, there is a risk that Deep Sea World would not be able to derive full benefit from the improved accessibility offered by the proposed scheme as the loss of parking facilities could limit business activities during busier periods. The residual impact on the viability of this business is therefore assessed, in the absence of suitable alternative parking provision, as adverse. The impact would be beneficial if alternative parking provision is found due to the improved accessibility. It is considered likely that Fife Council will be supportive in assisting the business in the identification of suitable alternative parking arrangements following further consultation with Deep Sea World (Appendix A7.2 provides a confidential business assessment).
- 7.6.5 Residual viability impacts for the Queensferry Hotel are also assessed as being adverse as a result of potential for disruption during construction and also changes in access and the visibility of the hotel during operation of the proposed scheme. However, as noted under potential impacts, there is also potential for revenue to be generated during construction as workers will require local accommodation, and the hotel may be considered to benefit from views of the Main Crossing during operation. However, due to uncertainty regarding the level of benefit that could be realised, these were not taken into account in the assessment and the residual impacts are considered to represent the worst-case scenario.
- 7.6.6 Residual impacts on viability would be beneficial for one assessed business (Ferrytoll Park and Ride) as the proposed scheme would allow the Forth Road Bridge to become a dedicated traffic corridor for public transport. Residual impacts on viability for all other businesses assessed would be neutral.

7.6.7 To the south of the Firth of Forth, there would be permanent land-take (11%) for one residential property (Inchgarvie House), where the approach to the Main Crossing would pass over the immediate gardens of the property, and also a permanent servitude right necessary over a further 11% of the gardens to allow for maintenance access during operation of the Main Crossing. The residual impact on this property in terms of land use is of Moderate significance. Although some areas of adjacent land will also be required, access to this property would be maintained. Two commercial properties would be significantly affected by land-take but residual impacts on viability would be neutral for all businesses assessed.

Indirect Socio-economic Impacts

7.6.8 No permanent residual impacts are anticipated on marine activities.

7.6.9 The proposed scheme would also have wider socio-economic impacts which cannot be quantified by this assessment. Improved transport connections and journey time reliability are expected to have significant economic benefits for Scotland. The effects on individual businesses will vary depending on the type of business activities. Overall, the proposed scheme is expected to significantly reduce the level of congestion and disruption in comparison to the baseline Do-Minimum, benefiting many local businesses and also the wider national economy of Scotland. Where a reduction in traffic on local roads would occur this could have adverse impacts for businesses that are reliant on passing trade, or beneficial impacts for those where access may be currently adversely affected by high traffic flows. Transportation and economic assessment of the proposed scheme is reported in detail in the DMRB Stage 3 Scheme Assessment Report.

**Community Land**

7.6.10 To the north of the Firth of Forth, the proposed scheme would result in the loss of approximately 4% of informal land at St Margaret’s Marsh SSSI and 13% of land from Hope Street Cemetery (refer to Figure 7.2). Although as noted in Section 7.5 (Mitigation), the detailed design would seek to avoid impacts upon any gravestones in this location. The residual impacts would be of Negligible/Slight significance for the land at St Margaret’s Marsh SSSI and Slight/Moderate significance for the Hope Street Cemetery. No other residual impacts on community land are identified to the north of the Firth of Forth.

7.6.11 To the south of the Firth of Forth, the proposed scheme would result in the loss of approximately 6% of designated Open Space adjacent to Kirkliston Leisure Centre, 6% to the south west of Kirkliston, 7% of land to the east of Standingstone Road, 31% of fields to the west of South Queensferry (refer to Figure 7.2). Approximately 57% of informal amenity area to the west of South Queensferry would also be affected.

7.6.12 The residual impacts for all identified areas of community land to the south of the Firth of Forth are of Negligible/Slight significance with the exception of impacts on fields to the west of South Queensferry where there is a Slight/Moderate impact on designated Open Space and a Moderate significance impact on an informal recreation area.

7.6.13 The operation of the proposed scheme is not expected to have any residual impacts on the recreational use of the Firth of Forth or other watercourses in the study area.

**Development Land**

7.6.14 The proposed scheme would result in residual adverse impacts on eight development allocations. There are also a number of associated planning applications which would also have adverse impacts. These applications are listed in Table 7.22 and are shown on Figure 7.2.

**Table 7.22: Residual Impacts on Development Land**

Allocation /Planning Application Reference	Potential Impact	Proposed Mitigation
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Allocation /Planning Application Reference	Potential Impact	Proposed Mitigation
<b>Development Allocations</b>		
HSG2, Springfield Road, South Queensferry	Direct land-take and changes in amenity	Noise barrier on false cutting to provide noise mitigation and also visual screening (refer to Figure 12.4).
ENV 6, Springfield Road, South Queensferry		
HSP 1, Strategic Housing Allocation, Kirkliston North	Direct land-take only. No adverse changes in amenity)	No specific mitigation
ECON 2, Employment Allocation, Ferry Muir, South Queensferry		
ECON 7 – Newbridge North		
CDA 8 Winchburgh Core Development Area		
Site HSG7, Society Road, South Queensferry	No direct land-take although changes in amenity	Detailed site specific mitigation to be considered on an individual basis for development applications
HSG 6/ECON 10 Port Edgar		
<b>Planning Applications</b>		
06/05149/OUT, 08/00031/FUL, 07/04254/FUL Land Adjacent to Queensferry Road, Kirkliston	Direct land-take. No adverse changes in amenity.	No specific mitigation
08/00529/REM, 08/02002/REM, 07/04961/REM, 08/00435/REM, 07/04960/REM 2A Kirkliston Road Newbridge		
07/01358/REM 9 Edinburgh Road, Newbridge		
1012/P/05, Land around, Winchburgh		
09/00490/OUT, Ferrymuir South Queensferry		
Springfield Road, South Queensferry (HSG2/ ENV6 site)	Direct land-take and changes in amenity	Noise barrier on false cutting to provide noise mitigation and also visual screening (refer to Figure 12.4).

7.6.15 The majority of residual impacts relate to very limited land-take (less than 0.5ha) along the edge of the highway boundary. The only exception is for the Springfield Road housing and open space allocations (HSG2 and ENV6) where the total land-take is over 5ha. This area is required for the development of the southern approach to the Main Crossing. Although the proposed mitigation in this area would help to reduce noise and visual effects, some adverse impacts on amenity would remain.

### **Agricultural, Sporting and Forestry Interests**

7.6.16 The magnitude and significance of residual impacts have been determined for each of the affected land interests (refer to Figure 7.1). These are detailed in Appendix A7.6.

7.6.17 The significance of residual impacts taking account proposed mitigation is summarised in Table 7.23.

**Table 7.23: Significance of Residual Impacts on Agricultural, Sporting and Forestry Interests**

	Substantial	Moderate/ Substantial	Moderate	Slight/ Moderate	Slight	Negligible/ Slight	Negligible
Northern Study Area	0	0	0	1	0	0	0
Southern Study Area	2	1	0	2	1	0	0
<b>Total</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>

7.6.18 The assessments make allowance for land to be returned to agricultural use. Two land interests (Dundas Mains and Overton Grazing) would have a residual impact of Substantial significance. One land interest would have a residual impact of Moderate/Substantial significance (Dundas Estate). Three land interests have a residual impact of Slight/Moderate significance and one land interest has a residual impact of Slight significance.

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- 7.6.19 Although mitigation measures have been identified where possible, the adverse residual impacts on agricultural, sporting and forestry interests are broadly similar to the pre-mitigation impacts as the major change relates to the permanent loss of land. Mitigation has been developed to return land not permanently required for the proposed scheme to agriculture and additional mitigation measures restore access and reduce severance. However, the impact of the permanent loss of land would remain.

7.6.20 The proposed mitigation would reduce potential impacts on the following farms:

- Dundas Estate, Land Ref 1, 6, 9 & 23 – The predicted significance of impact was assessed as Substantial on account of the impacts of land-take (approximately 42.3ha equating to 9% of the farm area) and total severance (approximately 24.4ha equating to 15% of the farm area). The area of land permanently lost to the scheme is reduced to approximately 34.7ha (7% of the farm area) by returning 8.2ha to agricultural use. The potential impact of severance is reduced by ensuring that access for agricultural vehicles and machinery to the severed fields to the north of the main alignment is maintained from the A904. This reduces the magnitude of impact to medium with a residual impact of Moderate/Substantial significance.
- Humber Farm, Land Ref 7 – The predicted significance of impact was assessed as Moderate/Substantial on account of the impacts of land-take (approximately 9.9ha equating to 5% of the farm area). The return of land temporarily acquired for a construction compound reduces the land-take to approximately 6.5ha (3% of the farm area). This reduces the magnitude of impact from medium to low with a residual impact of Slight/Moderate significance.

7.6.21 The residual land-take impacts of the proposed scheme are summarised in Tables 7.24 and 25. The areas presented in the table are estimates of the total land lost to the proposed scheme after mitigation measures, such as the return of land to agricultural use, has been completed.

**Table 7.24: Residual Land-take of Agricultural, Sporting and Commercial Forestry Land**

	Prime Agricultural Land (ha)			Non-Prime Agricultural Land (ha)					Woodland (ha)	Scrub (ha)	Totals (ha)
	LCA Class			LCA Class							
	1	2	3.1	3.2	4	5	6	7			
<b>Northern Study Area</b>											
Land Required for the Proposed Scheme	0	3	0.2	1.8	0	0	0	0	0.4	1.3	6.7
Land Returned to Agriculture	0	0	0	0	0	0	0	0	0	0	0
Net Loss	0	3	0.2	1.8	0	0	0	0	0.4	1.3	6.7
<b>Southern Study Area</b>											
Land Required for the Proposed Scheme	0	24.2	57.5	4.2	0	0	0	0	4.5	0	90.4
Land Returned to Agriculture	0	7.4	5.1	0	0	0	0	0	0	0	12.5
Net Loss	0	16.8	52.4	4.2	0	0	0	0	4.5	0	77.9
<b>Totals</b>	<b>0</b>	<b>19.8</b>	<b>52.6</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4.9</b>	<b>1.3</b>	<b>84.6</b>

Note: Quoted hectarages are approximate.

**Table 7.25: Summary of Residual Impacts – non-agricultural land**

	Prime Agricultural Land (ha)			Non-Prime Agricultural Land (ha)					Woodland (ha)	Scrub (ha)	Totals (ha)
	LCA Class			LCA Class							
	1	2	3.1	3.2	4	5	6	7			
<b>Northern Study Area</b>											
Land Required for the Scheme	0	0	0.5	0	0	0	0	0	7.7	5.8	14
Land Returned to Agriculture	0	0	0	0	0	0	0	0	0	0	0
Net Loss	0	0	0.5	0	0	0	0	0	7.7	5.8	14
<b>Southern Study Area</b>											
Land Required for the Scheme	0	0	1.1	0	0	0.2	0	0	0.1	0	1.4
Land Returned to Agriculture	0	0	0	0	0	0	0	0	0	0	0
Net Loss	0	0	1.1	0	0	0.2	0	0	0.1	0	1.4
<b>Totals</b>	<b>0</b>	<b>0</b>	<b>1.6</b>	<b>0</b>	<b>0</b>	<b>0.2</b>	<b>0</b>	<b>0</b>	<b>7.8</b>	<b>5.8</b>	<b>15.4</b>

Note: Quoted hectarages are approximate.

7.6.22 It is estimated that a total of approximately 100ha of land would be lost to the proposed scheme (net of land returned to agriculture). Of this, 74ha (74%) is prime land and the majority of this is located south of the Firth of Forth. Approximately 6.2ha of non-prime land would also be permanently lost to the proposed scheme.

7.6.23 It is estimated that a further approximately 12.7ha (13%), of woodland would be lost to the proposed scheme. A further 7.1ha (7%) of scrub would also be permanently lost.

Likely Future Farm Viability

7.6.24 Those agricultural, sporting and forestry interests assessed with a residual impact significance below Moderate, (i.e. not significant) were assumed to remain viable. The four farms with a residual impact significance of Moderate or above were assessed to determine whether or not they would remain viable. A summary of the effects on the farm businesses and comments on the impact on likely future viability are contained in Appendix A7.6.

7.6.25 One farm, Dundas Mains, is assessed as having its likely future viability compromised by the proposed scheme. In the case of this farm, it is anticipated that the permanent land-take would extend to approximately 18.4ha representing 32% of the farm area. Additionally, a further 5.2ha would be severed although access would be provided as part of the proposed scheme and through accommodation works. Nevertheless, the loss of the land and the severance would compromise the operation of the farm to such a degree that future viability would be threatened.

7.6.26 Although land-take in absolute terms is high in the case of Dundas Estate, the remaining land will continue to support a viable agricultural unit. The farm will be able to continue to operate with the road in situ although travelling time to some fields will be increased. Consequently it is assessed that the farms likely future viability will not be compromised by the proposed scheme.

7.6.27 Land-take as a proportion of the farm area is high in the case of Overton Grazing. However, it is not considered to be a commercial farm and as such it is not appropriate to consider farm viability. The unit will be able to continue to operate, albeit on a reduced scale.

Summary of Impacts on Agricultural, Sporting and Forestry Land

- 7.6.28 Seven active agricultural, sporting and forestry interests and a further eight non-agricultural land interests would be affected by the proposed scheme.
- 7.6.29 The proposed scheme would result in adverse residual impacts (Moderate or above) on four land interests. It is predicted that the viability of one of these units (Dundas Mains) would be affected.
- 7.6.30 It is estimated that there would be a loss of approximately 112.5ha of agricultural land, woodland and scrub in order to construct and operate the proposed scheme. However, approximately 12.5ha of agricultural land is expected to return to agriculture reducing the estimated permanent land loss to 100ha (of which 74% is prime agricultural land). Of the 100ha permanently lost, 84.6ha within 47 fields is from land interests with active agricultural, sporting and forestry operations and equates to 4% of the land farmed.
- 7.6.31 Overall, the proposed scheme is assessed as having a Slight/Moderate significance residual impact on agricultural, sporting and forestry land interests. This is based on the total area of land lost, its quality and the overall impacts of severance, access and drainage on the affected active agricultural, sporting and forestry land interests.

## **7.7 Ongoing Design Development**

### **Alternative Construction Compound**

- 7.7.1 An addition to the scheme proposals is the inclusion of an alternative location for the construction compound to the west of South Queensferry. This alternative was identified in response to concerns raised by local residents during the ongoing consultation process, and it locates the compound further to the west.
- 7.7.2 This alternative site was identified subsequent to the completion of the assessment of potential impacts of the proposed scheme on land use as reported in this chapter. However, as land-take requirements are affected by the inclusion of this alternative site, an assessment of its impacts on land use has been undertaken and is provided in Chapter 19 (Disruption Due to Construction).

### **Ferry Hills Rock Cuts**

- 7.7.3 The proposed scheme design as assessed in this chapter includes significant rock cuts to the north and south of Ferrytoll Junction. Detailed design may allow these rock cuts to be avoided or reduced. Design development indicates that there could be potential for a westward shift of the proposed scheme alignment of up to approximately 15m between approximate chainage ch7500-7800 (southwest of Jamestown) and ch8150-8500 (west of Hope Street Cemetery) to allow the rock cuts to be avoided.
- 7.7.4 Environmental review of this refinement indicates that this could reduce adverse impacts associated with the rock cuts without materially increasing other environmental effects. If this option were taken forward it would remove the Slight/Moderate residual impact on Hope Street Cemetery reported in this chapter (refer to paragraph 7.6.10 of Section 7.6).

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