

- Other relevant published information including:
 - An Urban Nature Conservation Strategy for Edinburgh ⁽²⁹⁾;
 - Records of badger activity from the Edinburgh and Lothians Badger Group; and
 - Ordnance Survey maps and scheme plans.

B.5.3 Ecological Baseline Conditions

General Ecological Context

The proposed route for Line One of the Edinburgh Tram will run mainly along existing roads, of limited nature conservation interest, with habitats limited to street trees and amenity grassland strips. Other habitats in the surrounding area include those associated with parkland, gardens and abandoned land. The main watercourse in the area is the Water of Leith. The proposals follow the Forth Estuary for part of the route.

The stretch of the route that supports the most significant terrestrial vegetation is the Roseburn Railway Corridor with woodland and grassland habitats.

Designated Sites

Statutory Designations

There are two sites that are designated as of national importance for nature conservation interest within 200m of the route.

- *Firth of Forth Site of Special Scientific Interest (SSSI)* ⁽³⁰⁾, *Special Protection Area (SPA)* ⁽³¹⁾/*Ramsar Site* ⁽³²⁾, designated primarily for regularly supporting wintering waterfowl, wildfowl and wader populations of European importance. The qualifying species include five species protected under *Annex I* of the *EC Wild Birds Directive (79/409/EC)*, sandwich tern, bar-tailed godwit, golden plover, red-throated diver⁽³³⁾ and Slavonian grebe⁽³⁴⁾. Five other species knot, pink-footed goose, redshank, shelduck, turnstone and waterfowl as an assemblage are qualifying species. The site is a complex of estuarine and coastal habitats extending east from Alloa to the coasts of Fife and East Lothian, covering approximately 6314 ha. The site is a few metres from the northern section of the route along Lower Granton Road and Trinity Road and will encroach into the SPA at Wardie Bay along Starbank Road.
- *Calton Hill SSSI* extends to approximately 13 ha, and is designated for its geological interest as part of Arthur's Seat Volcano SSSI complex. It comprises basalt, shales and sandstone of the Lower Carboniferous age. The hill supports woodland, scrub and species poor acid grassland of local interest within the City of Edinburgh; Calton Hill

(29) The City of Edinburgh District Council (1992) *An Urban Nature Conservation Nature Conservation Strategy for Edinburgh*. Edinburgh District Council Department of Planning.

(30) A site identified by Scottish Natural Heritage (SNH) as requiring special protection because of its flora, fauna, geological or physiographical features under the *Wildlife and Countryside Act, 1981 and amendments*.

(31) Special Protection Area (SPA) - a site designated under the European Directive on Conservation of Wild Birds (79/709/EEC) (known as the Birds Directive) to protect birds that are considered rare or vulnerable within the European Community and all regularly occurring migratory birds. Enacted in the UK through the *Wildlife and Countryside Act, 1981* and subsequent amendments and the *Conservation (Natural Habitats &c) Regulations, 1994*.

(32) Ramsar Site - a site that has been designated under the *Convention on Wetlands of International Importance Especially as Waterfowl Habitat* (known as the Ramsar Convention) to protect internationally important wetlands.

(33) Also listed on *Schedule 1 of the Wildlife and Countryside Act, 1981 as amended*.

(34) Also listed on *Schedule 1 of the Wildlife and Countryside Act, 1981 as amended*.

and Regent Gardens is also designated as an Urban Wildlife Site (see *Table B181* below). The site is approximately 100m from the route at the top of Leith Walk into York Place.

Non-statutory Designations

There are several sites of local nature conservation interest in proximity to the route, and details are provided in *Table B18*. The route is aligned along the Roseburn Railway Corridor, an Urban Wildlife Site (UWS) ⁽³⁵⁾, for approximately 3km and will encroach into the 'Coastline' UWS along approximately 250m at Wardie Shore. The Water of Leith UWS is crossed twice by the route, once via Coltbridge Viaduct in the Wester Coates area and once via Ocean Drive in Leith.

Habitats and Species of Note

Protected Species

Records from the Edinburgh and Lothians Badger Group, together with site visits, have identified extensive signs of breeding and foraging badger ⁽³⁶⁾ along the Roseburn Railway Corridor ⁽³⁷⁾. This information will be taken into account in the detailed design of the tram line to ensure that the main areas of interest are retained and protected wherever possible. Appropriate mitigation measures will be implemented, in agreement with SNH and CANHU, to minimise habitat loss and disturbance to badger (see *Section B5.6*).

Pipistrelle bats ⁽³⁸⁾ (55kHz) ⁽³⁹⁾ were recorded foraging along the Roseburn Railway Corridor during the September 2003 surveys. Bats are also known to forage along the Water of Leith. There are no known roost sites along the proposed tram route and no indications of bat roosts were identified during the survey.

Otter ⁽⁴⁰⁾ and kingfisher ⁽⁴¹⁾ are known from the Water of Leith, which will not be directly affected by the scheme.

Protected bird species of note that are qualifying species of the SPA/Ramsar Site include Slavonian grebe, red-throated diver, sandwich tern, bar-tailed godwit and golden plover. Of these, red-throated diver, sandwich tern and occasionally Slavonian grebe are known from the area of the Forth that will be affected by construction of the tram.

(35) Sites within the local plan area which have been identified by CEC as being of known conservation interest in the local context in terms of their flora, fauna and geological features.

(36) Protected under the *Protection of Badgers Act, 1992*.

(37) Details of the status of badger along the route is contained in a separate and confidential report which is available to tie, CEC, SNH and CANHU.

(38) Protected under the *Wildlife and Countryside Act 1981 and amendments* and the *Conservation (Natural Habitats, &c) Regulations 1994*.

(39) Two species of pipistrelle are identified using a bat detector which picks up the frequency of the bat's call. One species emits a call at 45kHz, the other at 55kHz.

(40) Protected under *Annex IIa and IVa of the EC Habitats Directive (92/43/EC)* and applied in the UK under *Conservation (Natural Habitats &c.) Regulations 1994*. Also a *Schedule 5* species, receiving full protection under the *Wildlife and Countryside Act, 1981 and amendments*.

(41) Protected under *Schedule 1 of the Wildlife and Countryside Act (1981) and amendments*. A particularly vulnerable species subject to special conservation measures (*EC Wild Birds Directive 79/409/EEC*).

Table B.18 Non-statutory Nature Conservation Designations

Site Name	Designation	Grid Ref	Size/ Length	Approximate distance and direction from the alignment	Main Ecological Importance
Water of Leith	UWS	NT 231734	94.5 ha	Crossed by the route via Coltbridge Viaduct (Wester Coates) and via Ocean Drive (Leith).	The river supports fish and invertebrate populations. Woodland and grassland habitats along the banksides provide a variety of habitats.
Disused Railway Network	UWS	NT 224743	26.8 km	The tram is routed along the Roseburn Railway Corridor between Roseburn Terrace and Telford Road.	Its function as a wildlife corridor (42), with areas of mature woodland and scrub habitat providing habitat for a variety of animals.
Silverknowes	UWS	NT 210765	197.9 ha	Silverknowes lies approximately 750m to the north west of the route.	The grassland habitats provide safe feeding and roosting areas for wading birds and wildfowl, particularly during the winter.
Granton Pond	UWS	NT 222767	1.3 ha	Granton pond lies approximately 400m to the west of the northern section of the route.	The pond has a good fish population and provides habitat for water birds. The surrounding scrub habitat provides habitat for nesting birds.
The Coastline	UWS	NT 245771	12.8 km	The northern section of the route runs along the Firth of Forth between Granton and Leith and will encroach into it for a stretch of approximately 250m.	Offshore waters and intertidal mudflats, important for feeding wildfowl and waders.
Corstorphine Hill and Ravelston Woods	UWS/ LNR (43)	NT 216742	217.6 ha	The designation extends to within approximately 200m west of the route.	Woodland habitat of varied age structure supporting a variety of bird and mammal species. Scrub habitat of value for migrant and nesting birds.
Calton Hill and Regent Gardens	UWS	NT 262742	13.1 ha	Approximately 100m to the south east of the route.	Naturally regenerating woodland and scrub habitat that supports a variety of common birds, mammals and invertebrates.

Local Biodiversity Action Plan (BAP) Habitats and Species

The City of Edinburgh Local Biodiversity Action Plan (LBAP) (44) contains local action plans for the wildlife of Edinburgh that reflect the aims and objectives of national plans for the habitats and species

(42) Linear habitat features such as watercourses and hedgerows that enable wildlife to move between other, often larger areas of habitat.

(43) A Local Nature Reserve is a site that is designated by a local planning authority under the *National Parks and Access to the Countryside Act, 1949* for its local special natural interest and/or educational value and is afforded protection through policies in the Structure and Local Plans.

(44) *The Edinburgh Biodiversity Action Plan, Edinburgh Biodiversity Partnership, March 2000.*



found in the local area (45). *Table B.19* lists the priority habitats and species known to occur within the area of the proposals from consultations, or observed during surveys and summarises the main action plan objectives for them.

Table B.19 Priority Species and Habitats Identified Within the Scheme Corridor

<i>Priority Habitat/Species</i>	<i>Location Within the Site</i>	<i>Action Plan Objectives</i>
Habitat		
Woodland	Along the Roseburn Railway Corridor and Water of Leith.	To prevent the loss of existing woodland and extend woodland cover by 1000 ha to 2500 ha in total (10% of Edinburgh). To enhance the social and environmental value of Edinburgh's woodland.
Urban habitats	Throughout the route.	To maintain the extent of urban wildlife habitat in Edinburgh and enhance its diversity through targeted conservation across the range of habitats identified (46).
Coastal and marine	Firth of Forth SPA/Ramsar, SSSI	To maintain and enhance the extent and quality of Edinburgh's coastal and marine habitats through targeted conservation action.
Rivers and burns	Water of Leith	To maintain and enhance the biological diversity of Edinburgh's rivers and burns.
Wildlife corridor	Roseburn Railway Corridor	To maintain and enhance the biological diversity of the network of terrestrial wildlife corridors in Edinburgh for the benefit of both wildlife and people.
Species		
Badger	Roseburn Railway Corridor	To safeguard Edinburgh's badger population.
Pipistrelle bats	Roseburn Railway Corridor and Water of Leith	To contribute to the UK Biodiversity Action Plan by maintaining a sustainable pipistrelle bat population in Edinburgh.
Kingfisher	Water of Leith	To maintain and enhance the kingfisher population in Edinburgh.
Swift	City Centre and Leith	To stabilise and then increase Edinburgh's swift population.
Knot	Granton foreshore	To maintain and enhance population of knot along the Edinburgh coastline.
Common tern	Firth of Forth	To retain the common tern colony at Leith Docks.
Song thrush	Leith Docks	To sustain the Edinburgh song thrush population.
River lamprey	Woodlands, parks and gardens across the city.	To conserve existing populations of river lamprey in Edinburgh and maximise opportunities for the natural establishment or re-establishment of the species within appropriate watercourses.
Brown trout	Lower reaches of the Water of Leith	To conserve existing populations of brown trout in Edinburgh and maximise opportunities for the natural establishment or re-establishment of the species within appropriate local watercourses.
Atlantic salmon	Water of Leith	To conserve existing populations of Atlantic salmon in Edinburgh and maximise opportunities for the natural establishment or re-establishment of the species within appropriate local watercourses.
Floating water-crowfoot	Lower reaches of the Water of Leith	To maintain and enhance existing populations of floating water-crowfoot in Edinburgh as representatives from near its northern margin of range.

(45) The Government and its advisors have developed national action plans to help conserve habitats that are threatened and species which are in significant decline.

(46) The action plan focuses on formally managed green spaces (golf courses, cemeteries, playing fields, parkland, gardens and allotments), urban commons (vacant and derelict land), and hard surfaces (buildings, walls and roofs).



Other Habitats and Species of Note

Red list bird species ⁽⁴⁷⁾ are known to occur along the route of the tram, recorded from the Roseburn Corridor and gardens along the route, including starling, house sparrow and song thrush. Two nationally scarce ⁽⁴⁸⁾ plants *Ranunculus arvensis* (corn buttercup) and *Andromeda polifolia* (bog-rosemary) have been recorded from Leith docks and *Ranunculus arvensis* (corn buttercup) has also been recorded from Granton.

Baseline Ecology

The proposed route for Line One will run mainly along existing roads, of extremely limited nature conservation interest, with habitats restricted to street trees and amenity grassland strips. Other urban habitats adjacent to the route, include parkland, gardens and derelict sites that have some local nature conservation interest in an otherwise built up area. Sections of the route with some nature conservation interest are described below in more detail.

Roseburn Former Railway Corridor

The tram is routed along the Roseburn Former Railway Corridor for approximately 3km between Roseburn Terrace and Ferry Road. This former railway corridor is designated as an UWS (see *Table B18*), for its interest as a wildlife corridor (a priority habitat identified in the Edinburgh LBAP, (see *Table B19*), linking habitats in the surrounding area. The tarmac cycle route along the centre is bordered by embankments and cuttings that have developed habitats typical of this type of environment, including coarse neutral grassland, tall ruderal species, scrub and broadleaved woodland, comprising mainly widely distributed species. These habitats support a range of animals, notably badgers and a range of birds. Pipistrelle bats forage along the route.

(47) RSPB et al (2002) *Birds of Conservation Concerning the United Kingdom, Channel Islands and the Isle of Man, The Population Status of Birds in the UK - Birds of Conservation Concern: 2002-2007*. Red list species are those whose population or range is rapidly declining, recently or historically and those of global conservation concern.

(48) Native plants which occur in 16 to 100 10 x 10km. squares in Great Britain. (JNCC (2000) - www.jncc.gov.uk/species/pstatus/default.htm).



Figure B.10: The Roseburn Corridor Cycleway Looking South Underneath St Georges School Bridges



Firth of Forth

The majority of the section of the route between Granton and Leith runs within a few metres of the Firth of Forth SPA/Ramsar, and intrudes into it along Starbank Road (see *Figure 7.1*). The site is designated primarily for regularly supporting wintering waterfowl, wildfowl and wader populations of European importance. These birds feed on extensive intertidal areas of the Firth and roost in habitats including saltmarsh, lagoons, adjacent fields, jetties and sea walls. The existing seawall, at mean high water mark, forms the boundary of the designated area.

B.5.4 Potential Impacts

Impacts resulting from the proposed development which have been considered include:

- Permanent loss of habitat or species due to permanent or temporary landtake for the proposals;
- Creation of barriers to the movements of animals, especially mammals, amphibians and invertebrates and plants with limited powers of dispersal;
- Fragmentation of habitat or severance of ecological corridors between isolated habitats of ecological importance;
- Disturbance or damage to adjacent habitat not required for the proposals through construction activities (movement of vehicles and personnel, artificial lighting, dust, spillage of fuels and chemicals, emissions and noise);

- Disturbance to or displacement of species as a result of construction activities;
- Alterations to drainage regimes which may affect habitats;
- Creation of new habitats and introduction of species as a result of reinstatement works, habitat enhancement proposals and landscaping.

Further impacts that may occur during the operational phase of the proposals include:

- Kills, disturbance or displacement of animals by the running of the tram;
- Damage or disturbance to habitat or species adjacent to the proposals through operational activities;
- Effects of emissions on habitats and species;
- Effects of pollution from contaminated runoff on adjacent habitats; and
- Impacts on animals caused by changes in night-time lighting conditions.

B.5.5 Methods of Prediction

Prediction and Evaluation of Impacts

An outline of the development proposals has been compared with the findings of the baseline survey to predict the impacts that may result from the scheme. In addition, likely effects on known habitats of nature conservation value in proximity to the scheme have been considered.

Evaluation Criteria

The significance of ecological effects is assessed according to the following primary criteria.

- The magnitude of the effect, as determined by its intensity and extent in space and time. This takes into account the vulnerability of the habitat or species to the change caused by the development and its ability to recover.
- The value, in nature conservation and ecological contexts, of affected receptors including species, populations, communities, habitats and ecosystems.

Significance is determined by the interaction of these primary criteria, being high for large effects on receptors of high value, and lower or insignificant for smaller effects on receptors of lower value.

Habitats are assessed according to the widely accepted criteria of which the most important are naturalness, extent, rarity and diversity; these and others are described in extensive literature. Existing statutory and non-statutory designations for the nature conservation importance and amenity value of the sites are also taken into consideration. In addition it is now generally considered that special importance be attached to ancient semi-natural habitats that depend for their survival upon traditional kinds of land management, for example, ancient coppice woodlands or meadows. These support special plant and animal communities that cannot be recreated quickly (if at all) and have suffered large reductions in the post-war period due to development and agricultural intensification. Species are similarly assessed according to accepted criteria and the extent to which they are under threat. The importance of species to wider communities is considered. Protection of species by the relevant legislation including the *Nature Conservation (Scotland) Bill, September 2003* ⁽⁴⁹⁾, *Wildlife and*

(49) <http://www.scottish.parliament.uk/bills/pdfs/b9s2.pdf>



Countryside Act, 1981 and amendments and the Conservation (Natural Habitats &c) Regulations, 1994 and non-statutory guidance, including LBAPs are taken into account.

Reference has been made also to the Draft Guidelines for Ecological Evaluation and Impact Assessment produced by the Institute of Ecology and Environmental Management (IEEM)⁽⁵⁰⁾.

B.5.6 Mitigation Measures

- Construction activities will be confined to the minimum areas required for the works.
- Temporary work areas including site accesses will be situated on areas of hard standing or areas of low conservation value wherever possible.
- Impacts to areas of identified nature conservation interest, including the Firth of Forth SPA/Ramsar Site/SSSI and Urban Wildlife Sites will be avoided as far as possible. Where works in these areas are unavoidable, the contractor will be required to ensure that best practice measures are adopted to minimise any direct or indirect adverse impacts.
- The contractor will be required to agree method statements in advance of construction with CANHU, SNH, SEPA and CEC for all construction activities in or adjacent to sensitive areas and for restoration proposals.
- New structures within the Firth of Forth SPA/Ramsar Site/SSSI will be designed to provide habitat for birds that currently use this stretch of the sea wall. Detailed mitigation measures will be developed in consultation with CANHU and SNH.
- Bird monitoring will be undertaken to further inform an Appropriate Assessment⁽⁵¹⁾ of the effects of the works within the SPA, and the information obtained will be used to develop detailed mitigation measures for the species and habitats affected. The details of the surveys will be agreed with SNH. The surveys are likely to involve data collection over a year, with the frequency of monitoring varying throughout the year from one to four counts per month, depending on the time of year. The findings of the surveys will be used to refine the mitigation measures proposed in the ES.
- Best site management practices will be adopted to minimise the risk of secondary impacts (including direct incursions, pollution *etc*) to habitat adjacent to the scheme corridor.
- Where works close to trees are required, techniques will be used to safeguard tree roots to reduce the number of trees of nature conservation value that are damaged or lost in accordance with the requirements of BS5837⁽⁵²⁾.
- Where street trees require removal, they will be replaced by an equal number of trees in the same location or if this is not possible in another location agreed with the CEC.
- Topsoil and subsoil will be stripped and stored separately and reinstated appropriately as soon as possible to minimise adverse impacts to the soil structure. Topsoil (and the seed bank which it contained) from areas of local nature conservation interest will be replaced along the works as close as possible to the location from which it was taken.
- Opportunities will be taken to enhance existing habitats of nature conservation interest that are retained and to create new habitats of value within the landscaping proposals.

(50) Article in IEEM Bulletin (In Practice) Number 29 September 2000.

(51) An Appropriate Assessment is required to determine the impacts of the proposal upon Natura site interests and specifically to provide the information necessary to ascertain whether it will not adversely affect the site's integrity.

(52) British Standards Institution (BSI) (1991) *Trees in Relation to Construction* BSI.



Where possible, landscape planting (other than ornamental and specimen tree planting) will be undertaken using native species typical of the area, obtained from local sources if possible.

- Any invasive alien species listed on *Schedule 9, Part II of the Wildlife and Countryside Act 1981 and amendments* identified within the scheme corridor will be removed from site at the start of works following best practice guidance to ensure they are not spread inadvertently along the route.
- The site has been checked for the presence of protected species and badger has been identified close to the area of works. As they are mobile species, further surveys will be undertaken prior to work commencing. Any subsequent mitigation measures that are required, will be agreed with CANHU and SNH and the work will comply with the requirements of relevant legislation.
- Measures to mitigate the impacts from the scheme on badgers will include sett relocation (if necessary), badger fencing in appropriate locations and badger tunnels under the tram route. The specific details of the mitigation measures will be worked up for the final scheme in consultation with CANHU, SNH and the Edinburgh and Lothians Badger Group.
- No bat roosts have been identified along the scheme corridor, however, all bridges and other built structures and mature and dead trees to be affected will be checked for roosting bats and nesting birds prior to construction and appropriate mitigation measures agreed with SNH and implemented if bats are found. If bats are likely to be disturbed, a licence will be obtained from CANHU.
- Bat and bird boxes will be erected in areas close to where mature trees are to be felled, or where built structures will be affected during construction in order to provide new habitat.
- Wherever possible, habitat removal (particularly woodland and other trees) will take place outside the breeding bird season (approximately mid March to the end of June) to avoid effects on nesting birds. Where this is not possible, all woodland and scrub will be checked for nesting birds before removal. If any are identified appropriate mitigation measures will be agreed with SNH and implemented.
- Areas of habitat disturbed during construction in areas not required for permanent works will be fully restored on completion of the works.

B.5.7 Impact Assessment

Designated Areas

Along Starbank Road at Wardie Shore, the walkway that will run alongside the tram will project out over the sea wall by approximately 3m for a length of approximately 250m, hence extending into the boundary of the Firth of Forth SPA/Ramsar Site/SSSI. This will impact on the bird species of interest using this area, at least during construction. Mitigation measures will be implemented to reduce these impacts to the minimum necessary for the safe completion of the works. Opportunities will be sought in the design of the new structures to provide additional roosting opportunities for the species using this area and to mimic the existing habitat along the sea wall. SNH has advised that the proposals will be subject to an Appropriate Assessment. Bird monitoring will be undertaken in agreement with SNH to inform the assessment and guide the development of detailed mitigation measures for the habitats and species affected. The surveys are likely to involve data collection over a year, with the frequency



of monitoring varying throughout the year from one to four counts per month, depending on the time of year. The findings of the surveys will be used to refine the mitigation measures proposed in the ES.

Information obtained on the qualifying interests of the site from SNH and from site visits and consideration of the proposed construction works, suggest that the impacts will be restricted to the area of the proposals and will be either of a temporary nature or not significant. The more detailed fieldwork to be undertaken to inform the Appropriate Assessment will confirm this and be used to refine the mitigation measures. Based on information to date about the use of the area that will be affected, the scale of the works *etc*, it is not considered that the integrity of the Firth of Forth SPA will be affected significantly. The SPA covers some 6314 ha and has recognised bird interests of several thousand.

The tram will run along the Roseburn Railway Corridor UWS for approximately 3km, between Roseburn Terrace and Telford Road. Construction of the tracks and walkway/cycleway will result in a significant impact to the site. The majority of vegetation will be removed along the embankments, affecting its function as a wildlife corridor. The impacts to this corridor will be limited to the minimum necessary through the implementation of mitigation measures (see *Section B5.6*), including the adoption of best practice measures during construction. As much vegetation will be retained as possible, while enabling safe completion of the works. No particular plant species of interest are known from the route. The impacts to badger and bats, which both occur along the corridor are described below.

Species of Note

There is a significant badger presence along the Roseburn Corridor and there are detailed records of their locations⁽⁵³⁾. Further survey work will be undertaken prior to construction to ensure that all setts are identified that could be affected⁽⁵⁴⁾. Construction of the tram will result in significant impacts to badger in the corridor. Mitigation measures will be implemented to ensure that works undertaken in close proximity to badger setts and foraging habitat will comply with the requirements of relevant legislation, in consultation with SNH and CANHU. There is a possibility that the loss of foraging habitat along the corridor could result in badgers foraging in adjacent gardens and becoming a nuisance. Appropriate mitigation measures will be developed with help from the Edinburgh and Lothians Badger Group and in agreement with CANHU and SNH, to minimise habitat loss and disturbance to badger and to ensure that measures are implemented during construction to safeguard the species as far as possible once the tram is in operation. Mitigation measures will also take account of the need to help prevent badgers moving into adjacent gardens.

Bats are known to forage along the Roseburn corridor and the loss of a significant amount of vegetation will reduce their foraging habitat availability; however, there are a number of sites in the surrounding area that also provide foraging habitat, including the Water of Leith, nearby gardens *etc*. The bat survey did not record any bat roost sites along the route. Prior to construction, all bridges and other built structures and mature and dead trees to be affected will be checked again for roosting bats and appropriate mitigation measures agreed with SNH and implemented if bats are found. If bats will be disturbed, a licence will be obtained from CANHU.

Otter and kingfisher are known from the Water of Leith, but will not be directly affected by the proposals.

There is the potential for several LBAP species to be directly affected by the scheme including badger, bats, knot, common tern, swift and song thrush (see *Section B5.3*). The impacts on badger, bats and

(53) This information is confidential and only available to TIE, CEC, SNH and CANHU.

(54) Badgers are mobile species and the location of setts which are used may change.



coastal bird species are discussed above. All bridges and other built structures and mature and dead trees to be affected will be checked for nesting birds prior to construction and appropriate mitigation measures agreed with SNH and implemented if any are found. Constructing the scheme outwith the breeding bird season as far as possible will restrict the risk of impacts to breeding birds. No significant impacts to fish or plant LBAP species are predicted because no watercourses will be affected and because no LBAP plant species have been identified from within the scheme corridor. The mitigation of impacts to wildlife will be designed to be consistent with the species priorities set out in the LBAP.

Other Permanent Impacts

The majority of the route occurs along roads of limited nature conservation interest, with habitats restricted to street trees and amenity grassland strips. No significant impacts to nature conservation interests are predicted in these areas. Trees will be retained where possible and where work is required close to mature trees, techniques will be used to safeguard tree roots to reduce the number of trees of nature conservation value that are damaged or lost in accordance with the requirements of BS5837⁽⁵⁵⁾.

Construction of the depot site is not predicted to have a significant impact on ecology. If the area of scrub and deciduous trees on the north western side of the site requires removal there will be a very localised, slight negative impact. Where possible, the existing vegetation on the north western side of the site should be retained and enhanced by protecting these trees during construction and through landscaping using native deciduous species. This will provide screening for the depot and offer some habitat for local fauna.

The majority of habitat loss will occur along the Roseburn Railway Corridor (see above).

Five LBAP habitats will be affected by the proposals:

- *Woodland* along the Roseburn Railway Corridor.
- *Urban habitats* along the route of the tram.
- *Coastal and Marine* habitats where the proposals encroach into the Firth of Forth.
- *The Wildlife Corridor* along the Roseburn Railway Corridor.

The Water of Leith is included in the LBAP habitat ‘*Rivers and Burns*’ and supports woodland habitat, but will not be directly affected by construction of the scheme. Best site management practices will be adopted to minimise the risk of secondary impacts, such as pollution incidents during construction and operation of the tram.

The mitigation of impacts to wildlife will be designed to be consistent with the habitat priorities set out in the LBAP. Opportunities will be sought to enhance these habitats and to create new habitats of value within the landscaping proposals.

Short-term Temporary Construction Impacts

During the construction period, measures will be implemented to reduce the risk of pollution including best management practices to control dust, noise, drainage *etc* and using appropriate bunds *etc* around storage tanks to contain spills and leaks. Best site management practices will be implemented to

(55) British Standards Institution (BSI) (1991) *Trees in Relation to Construction* BSI.



reduce the risk of introduction of alien species from vehicles and other machinery during construction, for example wheels on all vehicles will be cleaned before they come onto site.

There will be significant disturbance to fauna around the site during construction from noise, lighting and dust, and some sensitive species such as badger, will be affected during construction along the Roseburn Corridor. Particular attention will be given to mitigating temporary impacts to badger and other protected species such as bats and nesting birds (see above).

During construction of the walkway at Wardie Shore, there will be significant temporary disturbance to the birds that use the sea wall. The more detailed bird survey and assessment proposed to inform the Appropriate Assessment will aid in refinement of the mitigation measures that will be employed to reduce these impacts to the minimum necessary for the safe completion of the work. These mitigation measures will be agreed in advance with SNH and CANHU.

Long-term Operational Impacts

There is the potential for wildlife casualties once the scheme is operational. Mitigation measures will be implemented including badger tunnels and fencing to accommodate badger movements and reduce the likelihood of casualties occurring. It is likely that wildlife will become habituated to the regular noise from the running of the light rail vehicles.

Disturbance from human presence from maintenance activities will be infrequent and the route of the tram is currently frequently disturbed by human presence. The areas of any maintenance activities will be checked for badger presence prior to undertaking them. If any signs of setts *etc* are identified, appropriate licences will be obtained.

B.6 Landscape Impacts and Visual Amenity

B.6.1 Introduction

This Appendix is the second draft of the full Landscape and Visual Impact Assessment. It assesses the impact of Tram Line One on the townscape of the City of Edinburgh, and on the visual amenity and views enjoyed by those living and working in those parts of city affected by the line, or enjoying business, tourist and recreational facilities in the area.

Landscape and visual impacts are closely related issues which are assessed separately:

- Landscape impacts are physical changes caused by a development which affect the character of the landscape and how it is experienced;
- Visual impacts are changes in views resulting from the development, changes in the visual amenity enjoyed by those who benefit from those views, and people's responses to these changes.

Landscape Impacts can consist of direct impacts on specific features and elements or more subtle effects upon the overall pattern of elements, which together make up the local character. Where the area being discussed is predominantly built-up, it is described as 'townscape' rather than landscape.

This chapter:

- Describes the existing landscape and visual environment of the area affected by Tram Line One, dividing them into 'character zones' to aid description and analysis

- Considers the sensitivity of the various character zones affected,
- Defines:
 - the extent of visibility of the proposals, and
 - the potential landscape and visual impacts, and
- Sets out the measures proposed for the mitigation of these impacts.

B.6.2 Consultations

Consultations regarding the visual and townscape impacts of Tram Line One have been undertaken with the City of Edinburgh Council City Development (Planning), Historic Scotland and Edinburgh World Heritage Trust.

Account has also been taken of comment from the Cockburn Association.

B.6.3 Methodology

This townscape and visual assessment is based on the ‘Guidelines for Landscape and Visual Assessment’ (The Landscape Institute with the Institute of Environmental Management and Assessment, 2nd Edition, 2002) and the ‘Design Manual for Roads & Bridges: Volume 11’ (TSO, for the Highways Agency, Scottish Executive and others), including Scottish Executive Supplementary Guidance.

For the sake of consistency between this and the STAG 2 report, the scales for recording the magnitude of effect and significance are in accordance with ‘Scottish Transport Appraisal Guidance, Version 1.0’ (Scottish Executive, September 2003).

Townscape Impact Assessment

Physical changes to the fabric of the city, such as the addition or removal of structures and buildings, or alterations to roads and open spaces, may alter the character and perceived quality of an area. These are considered to be townscape ‘effects’.

Townscape impact assessment considers these effects on the integrity and character of the townscape as a whole, considering not only the individual components but also the overall form and coherence of the places affected.

The significance of the impact derives from the combination of the magnitude of the ‘effect’ - the physical change and the degree of change this causes to the character of the site and its surrounding - with the sensitivity of the site and its surroundings (its perceived importance and its ability to accept change).

Baseline and sensitivity

The first stage of the townscape assessment therefore consists of the collection of baseline data relating to the components, character and quality of the townscape of the areas affected by the tram, in order to assess their sensitivity to change.

The assessment of the sensitivity of the site and its surroundings is a combination of objective and subjective judgements. It combines a consideration of planning and conservation designations, an understanding of historic and cultural associations, and an understanding of the site’s past and likely

future development, with professional judgement on its situation and value and how the anticipated changes will be perceived.

For the purposes of this assessment, sensitivity has been categorised as:

- Highly sensitive: areas of townscape that are highly valued, particularly distinctive, or considered susceptible to small changes. The World Heritage Site and Conservation Areas fall into this category.
- Moderately sensitive: areas of townscape that are valued more locally and/or are tolerant of moderate levels of change. Leith Walk is an example of this category
- Slightly sensitive: areas that are generally not valued for the quality of their townscape, areas considered potentially tolerant of noticeable change, or areas undergoing substantial development such that their character is one of change. This category would include areas of very mixed development forms with weak urban structure, or areas currently undergoing significant development such as most of Leith Docks and Granton Waterfront

Magnitude

The project is then described, character area by character area. The changes to elements of the townscape arising from the development, and the degree to which this affects the townscape as a whole are made clear.

For the purposes of this assessment, the magnitude of physical change and the degree of change this causes to the character of the area has been categorised as:

- High: ranging from noticeable change to the townscape over a wide area through to intensive change over a limited area. Examples of this would be
 - the construction or demolition of buildings or substantial structures, including tram stops, in a manner that alters the pattern and form of the area,
 - substantial realignment of a road or
 - the introduction of overhead cabling into a main or formal street.
- Medium: ranging from small changes to the townscape over a wide area through to noticeable change over a limited area. Examples of this would be
 - the construction or demolition of buildings or substantial structures, including tram stops, in a manner that makes only small changes to the pattern and form of the area,
 - the minor realignment of a road or extensive resurfacing with new materials, or
 - the introduction of overhead cabling into a minor street or industrial estate.
- Low: ranging from very minor changes to the townscape over a wide area through to minor changes over a limited area. Examples of this would be
 - alterations to buildings or substantial structures in a manner that makes virtually imperceptible changes to the pattern and form of the area,
 - minor resurfacing with new materials, or
 - the introduction of overhead cabling in an industrial area, or in a location where such cabling already exists.

- None

Significance

To provide a framework to aid consistency of reporting, both townscape and visual impacts are assessed on a seven-point scale:

- Major (positive or negative);
- Moderate (positive or negative);
- Minor (positive or negative);
- Neutral.

which is derived by combining the impact magnitude and receptor sensitivity in the matrix set out below.

It must be understood that the issues of sensitivity and magnitude are continua, which have been categorised into three broad bands. The placing of effects and sensitivity into these bands, as well as the categorisation in the matrix of the results of the combinations of sensitivity and effect are all issues of professional judgement.

Sensitivity to change of townscape ↓	Magnitude of townscape effect:		
	High	Medium	Low
Highly sensitive	Major		Moderate
Moderately sensitive		Moderate	
Slightly sensitive	Moderate		Minor

Neutral impacts will result where there is a change which neither improves nor degrades the townscape. An example of this would be the realignment of a road with the old route fully reinstated: the townscape has changed but it is neither better nor worse than it was before.

Major and moderate impacts are considered significant.

Visual Impact Assessment

Visual effects are changes in the composition and character of views available to people living, working and recreating in the area affected by the proposed development - the ‘receptors’ of the views.

Visual impact assessment considers the response of the receptors to these changes and the overall effect on the visual amenity - the pleasantness of the view or outlook - they enjoy.

The significance of the impact derives from the combination of the magnitude of the change with the sensitivity of the receptor.

By definition, visual effects can only occur within the area from which the tram system is visible. The first step is therefore to establish this area, the ‘visual envelope’ (fig 7.4).

Sensitivity

The sensitivity of the receptors of visual effects has been assessed by taking account of peoples differing responses to views and thus their perception of visual amenity. Factors considered were the nature and context of the viewpoint, the importance of the view, and the expectations and reasons for being there of the receptors.

For the purposes of this assessment, sensitivity has been categorised as follows.

- Highly sensitive: receptors for whom the view is important or where changes could be critical to the visual amenity, such as
 - iconic views of the city (classic pictures such as the Castle from Princes Street),
 - designed vistas in the New Town,
 - the main outlook from residential properties,
 - people enjoying tourist locations, and
 - people enjoying outdoor recreation activities.
- Moderately sensitive: receptors for whom the change in the view is a small element in the overall view, not critical to the visual amenity, or where the nature of the view is of secondary importance to the user - for example
 - people travelling through or past (on roads and railways),
 - shoppers and
 - people enjoying indoor recreation activities.
- Slightly sensitive: receptors for whom the change is of little importance or irrelevant, for example people at places of work such as offices and industrial areas where their attention can reasonably be expected to be focussed on their work or activity.

Magnitude

The assessment of magnitude of visual change takes into account the scale of the change within the townscape in the view in question, the importance and value of the townscape viewed and the extent of the view affected by the change. For the purposes of this assessment, the magnitude of visual change has been categorised as:

- High: the proposed development dominates the view and substantially changes its character and quality
- Medium: the proposed development is clearly noticeable in the view and affects its character or quality
- Low: the proposed development is visible but has no material effect on its character or quality
-

All receptors within the study area likely to experience visual impacts have been assessed and the results tabulated and plotted on plan. However, due to the scale and complexity of the urban fabric and the similarity of views from adjacent properties, all but the most important receptors buildings have been grouped and considered as streets and blocks rather than individual locations.

Significance

As with townscape assessment, visual impacts are assessed on the same seven-point scale:

- Major (positive or negative);
- Moderate (positive or negative);
- Minor (positive or negative);
- Neutral.

This again is derived by combining the impact magnitude and receptor sensitivity in the matrix set out below.

It must be understood that the issues of sensitivity and magnitude are continua, which have been categorised into three broad bands. The placing of effects and sensitivity into these bands, as well as the categorisation in the matrix of the results of the combinations of sensitivity and effect are all issues of professional judgement.

Sensitivity of receptors ↓	Magnitude of visual effect:		
	High	Medium	Low
Highly sensitive	Major		Moderate
Moderately sensitive		Moderate	
Slightly sensitive	Moderate		Minor

Major and moderate impacts are considered significant.

Scheme Design and Mitigation

The Edinburgh Tram Line One is not precisely defined at the time of writing this assessment. The following paragraphs explain the background to the indicative scheme that has been used as a basis for these assessments.

The Bill laid before Parliament gives wide-ranging powers for the construction of the Edinburgh Tram Line One, within the ‘limits of deviation’ laid down in the plans accompanying the Bill. In addition, neither the form of contract nor the contractual specification have been defined at the time of writing. There is therefore no contracted design.

The Bill will be based on an indicative design developed by the Line One team. This design is based on best engineering, traffic and transport knowledge and has been designed in the knowledge of environmental and social concerns to balance the economic and transport benefits of the tram against any traffic and environmental disbenefits.

A Design Manual has been produced setting out the principles of urban design and detailing to be followed in the final design. Tie has also commissioned specimen townscape-led designs for key areas of the World Heritage Site. Tie has committed to including a requirement in any design or design and build contract that the final design is to comply with the requirements of the Design Manual.

The design assessed in this chapter is the indicative engineering design, with the requirements of the Design Manual incorporated to the extent to which they are known at the time of writing. Where the emerging requirements of the Design Manual conflict with the indicative design, the indicative design has been assessed, so as to consider the ‘worst case scenario’

Partly because of indicative nature of the design and partly because mitigation of townscape and visual impacts is built in through the Design Manual, it is neither practical nor worthwhile to separate out ‘unmitigated’ and ‘mitigated’ impacts in the assessments in order to highlight the extent of mitigation. The mitigation is, however, identified and the mitigation that tie are committing to include in the finished works is outlined.

Areas where mitigation is provided by planting will also be assessed at a notional ten years after completion to allow for plant establishment.

Specific assumptions about the finished design in any particular area are included in the relevant sections of scheme description below

B.6.4 Baseline: Edinburgh's Townscape

Edinburgh is long established as one of UK's national cultural assets and is the most highly valued of Scottish townscapes. It contains one of the largest areas of Georgian architecture in Europe and almost the entire city centre is inscribed on the UNESCO register of World Heritage Sites due to its unique architectural heritage and distinctive townscape. Conservation areas cover about one third of the city and there is a general agreement that its special urban qualities have to be safeguarded and protected.

The route has been divided into a series of character zones (figure 7.5) and the following paragraphs describe the townscape of each zone.

Haymarket

Haymarket is a mixed residential, retail and office area around the city's second station, laid out in the latter part of the c19 as part of rapid westward and southerly expansion of the city. It is a major transport interchange and a busy traffic junction with high vehicular and pedestrian flows.

Haymarket Station, built in 1840 to a design by John Miller, is the oldest Scottish station surviving mostly in its original state. It was the terminus of the Glasgow-Edinburgh railway until the line was pushed through Princes Street Gardens to Waverley in 1846.

The station is particularly busy at rush hour, with commuters from the west and Fife. Haymarket Terrace and Dalry Road are the main traffic routes from the west into the city.

The street pattern is complicated and building lines do not always follow the street pattern, creating somewhat incoherent spaces with little sense of containment. The large car park adjacent to the station adds to the fragmented appearance.

One of the principal features of the area to be considered with the introduction of the new tram route is the axial view along West Maitland Street, terminating at the station. This view is contained within formalised terraces of tenements continuing the character of the western New Town, albeit with more modest architecture.

There is a wide diversity of architectural styles: modern office blocks and car parking around the station and alongside the railway; modern terraced housing where Haymarket merges into the back of Roseburn; Victorian tenements, with continuous shop fronts on the north side of Haymarket Terrace.

Haymarket Station, with its classical frontage, is aligned on the axis of West Maitland Street and terminates, albeit weakly, an important vista from the West End.

Haymarket goods yard (Dalry Road/Morrison Street corner) is the last major empty site in the city and is currently the subject of development proposals.

New Town: West End

The West End, from just east of Haymarket to the end of Princes Street, is an architecturally coherent extension of the New Town developed in the period up to 1880, and part of the World Heritage site.

The principal characteristics of the street are its formal axiality and symmetry. Three to four storey classical sandstone tenements with front basements line most of the street, with shop-fronts projecting forward to the pavement line at both the Princes Street and Haymarket ends. Midway along the street, the formal Atholl and Coates Crescents step back to create a central oval open space, with the main



road passing between almost symmetrical garden enclosures. The street is defined by trees, which continue the line of the building frontages either side.

The Princes Street end is an extension of the town centre retail area; the centre section is in office and residential use, with local retail adding to the mix close to Haymarket. It is also a major traffic thoroughfare to the city centre, with the Haymarket end effectively an extension of the Haymarket transport interchange.

New Town: Princes Street

Originally named South Street, Princes Street is the southern-most of the three principal east-west axes that, together with the seven cross streets, make up the formal planned grid of James Craig's design for the first New Town, development of which started in 1767.

The Parliamentary Act of 1816 prevented further building on the south side of Princes Street, leaving St Johns Church, the National Galleries Playfair building and the Scott Monument as the only structures above street level between the New Town and the Old Town across Princes Street Gardens. It also left Edinburgh with a townscape unique in world cities, described⁽⁵⁶⁾ as "the most important asset and the true singularity of Edinburgh; the physical separation and the visible conjunction of the Old Town and the New."

The north side of the street has a continuous façade, three to six storeys high, broken only by the cross-streets. There has been continuous demolition and renewal over the past 200 years, such that the architectural style and quality of the north side is extremely varied, a catholic mix of shop and some hotel fronts of almost every era: from a few Georgian remnants, through exuberant Victoriana to brutalist 1970s major store developments and 1990s post-modernism. Although several have architectural interest, their collective appearance can best be described as incoherent. Many exhortations to comprehensive redevelopment have been made over the years and in 1958 total redevelopment was proposed by the Princes Street panel, with each block having a first floor walkway to ease congestion at pavement level and a number of examples of this imposition remain.

The defining point of the street is its magnificent setting, open to the south with views across the gardens to the Castle and the Old Town. Assisted by the topography of the New Town site, the north-south streets offer spectacular views across Princes Street Gardens to the Old Town, especially Castle Street looking towards the Castle, Hanover Street looking towards the Mound, but punctuated by the façade of the National Gallery and South St David Street, where the Scott Monument forms a landmark in the vista to the High Street on the ridge.

Along the south side of the street there is a decorative cast iron railing and a solid row of traditional memorial park benches donated over the years. The wide pavement of the north side has been improved recently with the introduction of clean-lined modern bus shelters and litterbins. Street lighting is mainly provided by building mounted spotlights.

The road has an asphalt carriageway with a mixture of concrete and granite kerbs, laid to give a broad kerb. The wide northern footway is paved with ground aggregate finish paving slabs and the narrow central reserve is setted. Most of the southern footway is surfaced with basic concrete slabs, except the area around Waverley Bridge, which has recently been upgraded with York-stone and granite paving.

As Edinburgh's principal shopping street, also containing hotels and offices, Princes Street is usually very busy and on Saturday afternoons the broad northern footway can be almost full. It is also a main public transport corridor, served by the majority of cross-city bus services. Waverley Station lies just south of the east end, at low level, poorly connected for pedestrians. New Town: St Andrew Square

(56) Professor A J Youngson, The Making of Classical Edinburgh



St Andrew Square, a formal tree-lined square bounded with railings, marks the end point of George Street, the principal axis of the New Town and, balanced by Charlotte Square, is a key element in the formal layout of this part of the World Heritage site.

Although never unified architecturally and despite almost continuous rebuilding over the past 235 years, St Andrew Square, as the banking centre of Scotland, has retained its scale and formality. Four storey Georgian frontages line the north side, whilst there is a diverse mix of building styles on the other three sides. Possibly the most important building is the imposing Royal Bank of Scotland (1771, Sir William Chambers), which together with the 41m high Melville Monument (1823, William Burn), terminates the axis of George Street. Other notable buildings include the Bank of Scotland (1851, David Bryce), Scottish Equitable (1899, Peddie and Browne); Scottish Provident (1961 by Rowand Anderson, Kininmonth and Paul) and Harvey Nichols (Comprehensive Design Architects, 2002).

The central gardens, now a formal square bounded with a low wall and railings, retain their important picturesque landscape function in the overall composition of Craig's New Town, even if little of the original design intention remains.

Because the Square sits astride a ridge, there are important views to the north, along North St Andrews Street and North St David Street over Queens Street Gardens and out to the Forth. To the south there are classic views to the Old Town, punctuated at the foot of south St David's Street by the Scott Monument.

The extent and maturity of the planting in the square allow few views of the whole space and the eye tends to be drawn along streets. The way the Royal Bank is set back gives an openness to the east side of the square. The buildings around the square are primarily in office use, with some retail, most notably the new Harvey Nichols. Although it links to all the main shopping areas of the city centre, the relative position of these is such that the pedestrian traffic around the square is comparatively light. This may change, however, if the new shopping street link to the St James Centre proves successful.

The roads have an asphalt carriageway with white kerbs and the footways are generally paved with concrete flags. Caithness slabs have been used to repave the footways in front of Harvey Nichols and the new bus station. Most of the street furniture is of simple utilitarian design with the exception of the fine cast iron railings to the square and along the front of the original facades.

New Town: Queen St to Picardy Place

Queen Street is the most northerly of the main original New Town axes. Like Princes Street, it is single sided and faces north to Queens Street Gardens, across which lies the northern extension or second New Town planned in 1801 by Reid and Sibbald.

York Place, similar to the West End although broader and more austere, is also an architecturally coherent, symmetrical, and generally high quality extension of the New Town. Largely completed in 1804, it contains probably the best of the surviving New Town houses, three to four storey classical sandstone tenements set back behind basements and protected by traditional cast iron railings. The eastern end of Queen Street was completed with north facing houses a little later, but is now dominated by the exuberant red sandstone Scottish National Portrait Gallery (Sir Robert Rowand Anderson, 1895).

Queens Street and York Place have a marked cross fall, requiring distinctive stepped kerbing along the southern footpath. This provides an important plinth below the terraced frontages.

At Picardy Place the building line continues in a similar style along the north side whilst the south side opens out into the complex junction with Leith Walk, Leith Street and Broughton Street. St Mary's Cathedral (J Gillespies Graham, 1813) sits back behind the east end of York Place, facing out onto



Picardy Place but currently screened by the street trees of the 1990s junction and townscape improvements.

The high quality basement railings are a significant feature of York Place. The other street furniture – bus shelters, litterbins and lighting - is of standard designs and quality. The road is surfaced in blacktop with narrow whin kerbs and concrete flag footways. Street lighting is provided by building-mounted floods.

The street is now mainly in office use, with some residential on the upper floors. There is one hotel, a few shops and, at the west end, the National Portrait Gallery. Traffic flows, both car and bus are heavy, but pedestrian movements along the street much less so. There are quite significant pedestrian flows across the east end of the street to Broughton Street.

Leith Walk

The main road from Edinburgh to Leith and laid out as a wide boulevard in the 19th century, Leith Walk is now a busy and active thoroughfare, important local shopping street and residential area.

Most of the street is lined with four-storey bay windowed or plain terraced Victorian sandstone tenements, with small, mainly independent shops on the ground floor, with front servicing. The generally uniform character and consistent building line is occasionally interrupted by unsightly office buildings, filling station and warehouses, set back from the street line. There are significant numbers of street trees, at the north end on the east side, in the centre on the west side, at Elm Row and at Gayfield Square. The character of the street is significantly affected by heavy traffic flows with bus services particularly frequent and the street is also busy with pedestrians.

Leith Walk was the subject of environmental improvements in the 1990's. The most successful part being at Elm Row, where new railings, planting and walls enclose the parallel street and the area is embellished with high quality paving, bespoke street furniture and artwork.

Elsewhere the ball shaped bollards, bollard post and rail pedestrian barriers and tree guards introduced as part of the improvements are dominant but mixed with standard pedestrian barriers, lampposts and bins. The bus shelters are mostly recent, of a simple pleasant design.

Leith Walk is surfaced with asphalt edged by narrow whin kerbs. The footways are generally paved with high quality concrete slabs, although the quality of the material can be hard to distinguish at the north end.

Leith

An independent Burgh for a relatively short period in the 19th and early 20th centuries but dating from the 12th century, Leith achieved independence from the City of Edinburgh in 1827, only to be re-amalgamated in 1921.

Historically, Leith was Scotland's primary port of entry prior to the union of the Parliaments in 1707, but much of its earlier building was replaced as a result of the massive upturn in Victorian trading, following by the Leith Improvement Act of 1880, which initiated wide-scale renewal.

Decline during the 20th century led to the demolition of some historic buildings and gaps in the urban fabric but the area has recently recovered and is undergoing a local development boom. A mix of recent and Victorian tenements, some of them elaborately ornamented, set directly at the rear of the footway, line much of Constitution Street creating a generally narrow street. A number of churches, set back from the building line, punctuate the street and the cemetery wall at the south end is a distinctive feature. Despite some 1960s high-rise flats visible from the route and a few unsightly buildings, the area has retained a distinctive character.



The street opens out north of Queen Charlotte Street, where the old centre has retained its historic alignment and a sizable number of high quality buildings with a mix of business, retail and mostly residential uses. Many of the frontage buildings are grade A and B listed, notably: the Assembly Rooms (1783 altered by Thomas Burn 1809); the Town Hall (1928 by R & R Dickson) and St James Church (1862 by Giles Gilbert Scott).

The main carriageway is asphalt surfaced, except at the northern end where it is setted, with narrow whin kerbs. The footways are mostly in-situ concrete surfaced, with some areas of concrete flags. There is little street furniture and what there is, is of a utilitarian nature.

Constitution Street is primarily in residential use at the south end, commercial in the old centre and a mix at the north end. It is moderately busy with traffic but has comparatively light pedestrian flows.

Port of Leith

Leith Docks evolved piecemeal from the mid 16th century, culminating in a radical programme of improvement and extension after the mid 19th century. This saw the construction of the Victoria Dock (1851), the Albert Dock (1869), the Victoria Swing Bridge (1871-4), the Edinburgh Dock (1873-81), the Prince of Wales Dock and Alexandra Graving Dock (1894-6). These monuments therefore constitute a coherent and strategically planned group of maritime/ industrial structures, the source of Leith's commercial success from the late 19th century.

The port area is currently undergoing a major transformation with new upmarket residential and business developments springing up between derelict industrial sites, scrap yards, newly landscaped areas, car parks and docks south of the still active port. There is a wide diversity of architectural styles from single-storey industrial shed depots and warehouses, to elegant Victorian brick built industrial buildings to modern multi-storey luxury apartment blocks, offices and shopping centres. Between these are the remnants of the robust, primarily Victorian, industrial architecture of the docks, such as the Alexandria Dry Dock and its pumping house, and the Victoria Swing Bridge, now stilled by the inelegant new Ocean Drive bridge adjacent. The older parts of the port are generally very open and exposed but the current building activity is increasing the urban density. Pedestrian routes around the area can be disjointed and hard to follow.

Around the new developments the street furniture is of a modern international style, with much stainless steel and tree planting. Elsewhere it is generally more utilitarian but there is some interesting Victorian detailing.

The recent developments are mostly asphalt roads with standard concrete kerbs and some concrete flag paved footways. The older parts have mostly sett-paved roads and a mixture of stone flags and in-situ concrete footways and footpaths.

The docks area a busy, fast developing mixed use area with increasing quantities of residential and commercial rapidly outweighing the industrial origins. Traffic flows are moderately heavy whilst pedestrian movements are light.

Newhaven to Granton

The heart of Newhaven retains the form, scale and character of its origins as a small fishing village, although now slightly cut off from its harbour by the traffic on Pier Place. Granton Square was developed in the 1830s as a part of the approach to Granton harbour and retains a strong formal quality.

Between the two is a quiet, primarily residential, seafront consisting mostly of two to four storey terraced houses along the south side of the street including brick terraces (unusual for Edinburgh) with



open views to the Forth. Few buildings have a front garden or elaborate facades. School grounds and small open spaces occasionally break the building line.

Lawns and a footpath occupy the linear space between Lower Granton Road and the seafront where the railway embankment was removed, leaving some remnant railway stonework. There are no buildings on the seaward side obstructing the view except for the Old Chain Pier and the sewage works. The vehicular traffic is steady but there is only little pedestrian movement in the area apart from some recreational walking at the seafront.

There is very little street furniture in the area, apart from standard street lighting, bus stops and some short sections of guardrail. The roads are paved

Asphalt road, in-situ concrete footways, narrow whin and concrete kerbs.

Waterfront Granton

Waterfront Granton is currently a mixture of derelict industrial areas and run-down, mostly post-war light industrial, warehousing and 'edge-of-town' retail developments. Almost lost in the centre of the area is Caroline Park house, with a remnant seventeenth century designed landscape (see *Chapter 11: Cultural Heritage*). Small areas of 19th century industrial waterfront survive along West Harbour road, including one key building: the lighthouse. The area is set to be almost totally transformed by the Waterfront Regeneration Project.

Pilton

The tram route runs along the edge of the recently constructed main road to the Granton Waterfront development, cutting a broad and still fairly raw swathe through this deprived area of post-war social housing. The corridor is separated from the neighbouring estates by substantial timber noise barrier fences and hedges and grass verges with a little planting. A wide pedestrian / cycle path along the east side make the road seem wider than it actually is. It is a traffic thoroughfare mainly for cars but currently little used by pedestrians and cyclists. Vehicle flows can be expected to increase substantially as the Granton development progresses.

Railway Corridor

The disused Granton Branch of the Caledonian Railway, now a linear open space and well used cycle and pedestrian path. The northern end is a broad flat strip of neglected open ground, an area of overgrown grass and shrubs bounded by low-rise housing estates and in part opening out onto a lightly used playground and mown grass recreation space. The southern half is mostly a lush woodland valley below surrounding residential areas but occasionally surfaces to level and in parts runs on embankment. A continuous overgrown hedge lines the path on either side and defines the boundary of the corridor.

A quiet park used mostly for recreational walking and cycling, parts of the route can feel somewhat insecure and remote, particularly at night, because little of it is overlooked.

Stone bridges, extensive stone retaining walls and old platforms act as reminders of the disused railway line. The cycle route is a simple asphalt path with no edge treatment, and timber steps lead to crossing streets. The only street furniture is street lighting and some information boards, mainly vandalised.



B.6.5 Predicted Townscape Impacts and Mitigation

Construction Phase

Construction activities for the tram will appear as an ordinary construction site of the sort common in urban areas, except that the sites will generally be long and linear, and will partially fill what are normally spaces within the fabric of the city. Many activities, such as the erection of the OLE supports and the equipping of the line is of such short duration that their effects on the townscape are negligible.

The main impact will arise from the enclosure of a series of linear sites with safety fencing, typically 2m high, while the main work of constructing and surfacing the tracks is undertaken. These will have the effect of temporarily blocking views and vistas. They will disrupt the enjoyment of the city for residents and tourists alike.

The degree of effect will depend in part on how the works are controlled and organised, partly on the location, and partly on how they are perceived - people's knowledge that they are temporary. They will generally have a negative effect of moderate magnitude on the quality of the townscape affected. Within the city centre, where important vistas and iconic views of the city are affected, the effects will be of high magnitude.

The location and disposition of the major construction compounds is unknown at the time of writing and cannot therefore be specifically assessed. It should be noted, however, that compounds for major construction projects usually have a negative effect of moderate to high magnitude on their surrounding townscape unless they are particularly well screened and managed.

Operational Phase

Details of the changes in the townscape arising from the introduction of the tram, including mitigation to which tie has committed, is described below, character zone by character zone, in a counter-clockwise direction, starting at Haymarket, where the south end of the Roseburn railway corridor meets the heavy rail and probable junction with Tram Line Two just west of Haymarket Station.

The effect of the tram on individual listed buildings and Conservation Areas is considered under Cultural Heritage. Account is taken of Conservation Area designations in the assessments in this section and the effects on the settings of key buildings are noted.

Overall, the proposal comprises

- the insertion of a twin-track light rapid transit track-bed, paved in a variety of materials according to the situation;
- stops with shelters, lighting, seating, ticketing and information;
- tram vehicles;
- overhead line equipment – conductor wires, supported on a combination of cables or poles and powered from new substations;
- signalling equipment and signs and.;

- a tram depot

The tram tracks will generally be inserted at existing grade. A number of existing bridge and wall structures will require alteration.

Exceptions to the above, such as regrading of parts of the railway embankment at Roseburn and single-track running in the St Andrew Square area, and alterations to structures, are highlighted in the section by section descriptions that follow.

A number of major road junctions will require to be comprehensively rearranged, including new traffic signalling, and existing traffic will be diverted from the tram route in a number of places. There will be a change of low magnitude in the townscape of a number of areas due to increased traffic, but because the extent of traffic diversion has not been fully modelled this cannot be assessed in detail.

The main sources of townscape impact generated by the tram will be the overhead infrastructure – wires and supports, new and altered structures – such as bridges, new buildings – the tram depot and substation housings, and the tram stops with their associated shelters, seating etc.

The tram signalling equipment and traffic signalling and signage required because of junction and traffic alterations are generally of themselves of low magnitude of effect. However, they potentially add a degree of clutter to the streetscape and may in sensitive locations have a cumulative effect, raising the overall townscape impact above a significance threshold.

The tram vehicles themselves will have an impact analogous to two or three coaches. This is a potential townscape impact in areas not currently trafficked, such as the former railway corridor.

The tram will be a new element in the city, clearly visible to all. The degree of impact is entirely dependent on the design of the system and the only real potential for mitigation is in ensuring that the various new and altered elements are appropriately designed and integrated into the fabric of the city.

To this end **tie** have commissioned a design manual, the contents of which are to be agreed with City of Edinburgh Council City Development (Planning) and which is currently under preparation. **tie** have committed to implementing the proposals and recommendations that arise from the design manual.

Haymarket

The Haymarket area has been defined as one townscape zone but it is heterogeneous in character and incoherent in built form, such that the impact of the tram will vary substantially within the zone.

The tram enters this zone parallel to the existing heavy railway to the south of Balbirnie Place, where a strip of existing screen planting will be replaced by twin tram tracks, opening up further an area where spaces are currently weakly defined by the built form. Overhead cabling will add to the general clutter of this area, already dominated by the heavy rail and its associated overhead wiring. A possible substation site has been identified in an unobtrusive location at the rear of the yard to the warehouse at 15 Devon Place.

East of Balbirnie Place, the tram will turn north, away from the heavy rail, passing between the new office developments of Haymarket Yards and the rear of the warehouses on Devon Place and the rear of the offices and tenements of Haymarket Terrace and emerging onto the top section of Haymarket Yards alongside Roseberry House. The tram track will replace some areas of car parking and small areas of landscaping and larger areas of derelict and apparently abandoned land, and lead to the loss of a small group of badly pruned trees in front of Roseberry House.



At the top of Haymarket Yards, the tram lines will turn east, at street level, onto a structure to be built up over the current station car park and run parallel to Haymarket Terrace, where a tram stop is proposed. They will then move onto to the street in a reverse curve at the end of Haymarket Terrace at the location of the current Caledonian Ale House, requiring the demolition of this B? listed building. The line will cross the Haymarket junction following the curve of Haymarket Terrace into Clifton Terrace and continuing straight along West Maitland Street towards the West End.

The demolition of the Caledonian Ale House will have the effect of weakening the already poor enclosure to Haymarket Junction, reducing the degree to which it is seen as a 'place'. However, the building up for the tram stop will have the effect of visually widening the road at Haymarket Terrace such that Roseberry House would appear to be the natural building line where at present it appears incongruously set-back.

To accommodate the tram running in a segregated lane, the entire junction at Haymarket will be reorganised. This reorganisation in itself generally has no real townscape effect, simply changing the directions of traffic flow and moving traffic islands. However, the junction design as frozen for the purposes of this assessment includes the widening of Morrison Street by 3 to 6 metres, flaring out between Morrison Link and Dalry Road. This would set back the building line for any future development on the goods yard site in a manner that would further weaken the enclosure of Haymarket.

The surface materials used through this area will vary according to circumstance. Alongside the heavy rail at Balbirnie Place and through the spaces to the rear of the new offices on Haymarket yards, the track-bed will be a traditional rail sleeper and ballast construction in order to make its function clear. Where the track runs on-street, at the top of Haymarket Yards and through the Haymarket junction, the track-bed will be finished in bitumen macadam with granite chips rolled in, in order to integrate it visually with the surrounding road.

Within the off-road section at Haymarket Terrace, and through the tram stop, the track-bed will be an integral part of a high quality pedestrian environment in this area.

The provision of the OLE with the conductor wires, support poles, cables and fixing will have a negative effect on the townscape, ranging in magnitude from high – through the junction and Haymarket Terrace – to low – between Balbirnie Place and the existing heavy rail.

Through the design manual, **tie** are committing to mitigating the potential impact of the tram through good design and the use of appropriate materials to integrate the tram into the existing streetscape. Through this area, these include particularly:

- Improvement to the pedestrian realm including comprehensive wall to wall repaving of footways as part of the comprehensive redesign of Haymarket junction required for the tram,
- The creation of an appropriate setting for the war memorial,
- Careful design of the OLE to simplify the layout, balance conductor wire and support cable sizes against support spacing so as to minimise the visual intrusion of the wiring, use visually appropriate methods of support, integrate the OLE supports with other vertical elements in the street (lighting and signing poles) as far as possible, and coordinate the spacing of new poles,
- A simple alignment of the tram through Haymarket junction to avoid as far as reasonably possible the need for complex OLE support structures or wiring, and to minimise the impact on the vista down Shandwick Place terminating at Haymarket Station,



- A straight alignment into and along West Maitland Street to respect the formality of urban design of the New Town,
- The use of surfacing and kerb materials appropriate to the location, as defined above
- A coordinated and visually integrated design for the tram stop, creating a high quality pedestrian space, and including walls or other architectural devices to recreate some of the enclosure of the entrance to Haymarket Terrace lost with the demolition of the Caledonian Ale House, to link the tram stop with Haymarket Station and to enhance the setting of the station building.
- The introduction of barrier fencing and hedging between Balbirnie Place and the tram in order to create visual enclosure and reinforce the urban form between the housing and the tram
- Soft landscape works to the open space between Balbirnie Place and the new offices at Haymarket yards to compensate for the loss of amenity
- Simple, unobtrusive design for the housing of the substation to the rear of 15 Devon Place.

Overall the townscape impacts of the introduction of the tram to the Haymarket area, with the committed mitigation, vary from major adverse to a limited area of major beneficial at Haymarket Terrace.

At Balbirnie Place, the introduction of the tram would be a change of medium magnitude, reducing the townscape quality of an area of slight townscape sensitivity. The townscape impact is therefore minor adverse.

At Haymarket Yards, there would be a change generally of low magnitude, medium at the top of the road in front of Roseberry House, reducing the townscape quality of the areas currently landscaped and improving the quality of the apparently derelict areas. The whole area is of slight townscape sensitivity; the townscape impact is therefore minor adverse to minor beneficial.

From Haymarket Station and across the junction, the tram would be a change of high magnitude on the boundary between an area of moderate sensitivity – Haymarket Terrace – and an area of high sensitivity, the edge of the New Town and the World Heritage Site. The townscape impact is therefore major adverse.

The tram stop itself would constitute a small area of change of high magnitude, improving the townscape of an area of moderate sensitivity, leading to a major beneficial impact. The degree to which this offsets some of the major adverse impact above will be entirely dependent on the quality of design of the area between the station and the stop.

Potential further mitigation outwith the remit of tram line one is being explored as part of a study with CEC planning and Network rail to explore the opportunity for a more radical approach to the design of the Haymarket area, considering a comprehensive upgrading of the transport interchange facilities and significant improvements to the public realm. This may be extended to consider the potential synergies with the new development proposed by EDI for the Goods Yard site, currently temporary car parking, between Morrison Link and Dalry Road.

New Town: West End

The tram will run straight through the West End, on road from West Maitland Street to Shandwick Place, with a stop proposed between Coates and Atholl Crescents



The track-bed will be finished in bitumen macadam with granite chips rolled in, in order to integrate it visually with the existing road. Textured bands will define the edge of the tram lanes, and from West Maitland Street to Coates Crescent the tram lanes may be slightly (50-100mm) raised above the adjacent road level to indicate that they are reserved exclusively for tram use. Footways in this area will generally be untouched, except between the open space of Coates and Atholl Crescents, where they will require to be realigned to accommodate the stop. These altered footways will be resurfaced in their entirety in materials appropriate to their location in accordance with the CEC public realm strategy.

The OLE in this area is envisaged as conductor wires supported from span wires. The span wires will be supported either from appropriately designed building fixings or from support poles. Together these will have a negative effect on the townscape, particularly in terms of the view down the designed vista towards Haymarket.

A stop, currently envisaged as an island stop, is proposed between Coates and Atholl Crescents. This would take the form of an extended island designed to appear as a well-detailed slightly raised area of pavement. The shelters, seating, signage and other equipment will be designed as an integrated whole, visually light and transparent.

To accommodate the two lanes of traffic that have to pass the island stop in either direction (a tram lane and a general traffic lane) the footways along the front of the garden areas will have to be set back, with consequent requirements to comprehensively redesign and rebuild the edges of the gardens along Shandwick Place. This would include taking down the broad low stone wall, and taking down 25 no trees, of which 7 are mature and the rest semi-mature.

The design as currently envisaged entails the reconstruction and making good of the edges of the gardens generally matching the existing design, but set back by up to 2m to accommodate the island stop. The trees would be replaced by semi-mature specimen trees of a minimum 40cm girth aligned to suit the revised design, which itself would respect the formality of alignment of the New Town.

New traffic signals will be required at the east end of Coates and Atholl Crescents, which would add a degree of clutter to this part of the street.

At Rutland Place slight realignment of the kerbs may be required to accommodate the tram alignment through the reverse curves in the road.

Through the design manual, **tie** are committing to mitigating the potential impact of the tram through good design and the use of appropriate materials to integrate the tram into the existing streetscape. Through this area, these include particularly:

- Careful design of the OLE to simplify the layout, balance conductor wire and support cable sizes against support spacing so as to minimise the visual intrusion of the wiring, use visually appropriate methods of support, integrate the OLE supports with other vertical elements in the street (lighting and signing poles) as far as possible, and coordinate the spacing of new poles,
- A straight alignment along West Maitland Street and Shandwick Place to respect the formality of urban design of the New Town,
- The use of surfacing and kerb materials appropriate to the location, as defined above
- A coordinated and visually integrated design for the tram stop, creating a high quality pedestrian space, and including comprehensive wall to wall repaving of footways along that part of Shandwick Place



- The redesign and reconstruction of the affected parts of the garden spaces to a design and standard acceptable to Historic Scotland and CEC planning department.
- Replacement of lost trees with an equivalent number of semi-mature specimen trees of a minimum 40cm girth, of species suitable for the location
- If the design Rutland Place entails the realignment of kerbs, the kerbs, adjacent paving, dwarf walls and bespoke railings would be rebuilt and made good to match the existing.

Overall the introduction of the tram to the West End, with the committed mitigation, will have a townscape effect of high magnitude, primarily arising from the OLE and the Shandwick Place tram stop. The site, a formally designed and laid out part of the World Heritage site is highly sensitive to change. The townscape impact is therefore major adverse.

There is the potential for further mitigation outwith the remit of Tram Line One by taking the opportunity to comprehensively upgrade the whole of the garden spaces at Coates and Atholl Crescents.

New Town: Princes Street

The tram will run on-street from Rutland Place centrally onto and in a straight line along Princes Street, as far as South St David Street for eastbound trams and South St Andrew for westbound trams. A stop is proposed just east of the junction with Castle Street.

Between Lothian Road and South Charlotte Street there are three lanes in either direction, occupying the entire current road width to accommodate vehicle flows in this busy junction.

The main part of Princes Street will have a layout broadly similar to the existing but with reduced road space. It will consist of a dual carriageway as at present but the centre strip will be increased to approximately 1.6m width. There will be one continuous lane of mixed tram and bus traffic and a discontinuous second lane in each direction. The discontinuous second lane accommodates bus stopping and limited amounts of bus running, but is frequently interrupted to allow variously for the tram stop, reduced width pedestrian crossings, and increased pedestrian circulation space at key points, as outlined below.

At the junction with South Charlotte Street the north footway is widened for a length of approximately 20 metres. At Castle Street both the north and south footways are widened over a length of approximately 100m including the Princes Street tram stop. At the mound the north side footway is widened over approximately 50m west and 20 m east of the junction and the south footway over approximately 100m east of the junction, including the current pedestrian pinch-point at the steps to the Royal Scottish Academy. At South St David Street the north side footway is widened over approximately 60m in front of Jenners and the Mount Royal Hotel.

In addition, the design allows for a general slight widening (½ to 1 m) of the south side footway between Waverley Bridge and the tram stop at Castle Street.

The track-bed will be finished in bitumen macadam, with granite chips rolled in, partly in order to integrate it visually with the existing road and partly to make it clear to pedestrians that this is road space. Textured bands will define the edge of the tram lanes.

The realigned kerbs will be a broad kerb in natural stone, and the altered footways will be resurfaced in their entirety in materials appropriate to their location in accordance with the CEC public realm strategy.



Signalised junctions will be modified and signals relocated but overall no significant increase in the extent of traffic signalisation is anticipated.

The works to the road will have a positive effect on the townscape of Princes Street, reducing the carriageway widths and simplifying the kerb alignments. There will also be a small gain in terms of urban function, with enhanced footway widths and eased pedestrian circulation.

The OLE along most of Princes Street will consist of conductor wires supported from twin cantilever (T-shape) columns along the centre island strip between the two carriageways. Between Lothian Road and South Charlotte Street the conductor wires may be supported from span wires, either from appropriately designed building fixings or from support poles. At the junctions with South St David and South St Andrew Streets more complicated OLE support wiring will be required to accommodate the curves in the conductors.

The use of support columns in Princes Street is particularly sensitive because there are currently no existing permanent vertical elements in the street.

The OLE will have a negative effect on the townscape, particularly in terms of the designed vistas down Princes Street towards Carlton Hill and from cross-streets, and in terms of the classic tourist views from the north side footway towards the Castle and Old Town skyline.

A stop, currently envisaged as a pair of kerbside stops opposite each other, is proposed just east of Castle Street. These would take the form of extended build-outs of the footway across the discontinuous near-side lane and would be designed to appear as a well-detailed slightly raised area of pavement. The shelters, seating, signage and other equipment will be designed as an integrated whole, visually light and transparent.

Through the design manual, we are committing to mitigating the potential impact of the tram through good design and the use of appropriate materials to integrate the tram into the existing streetscape. Through this area, these include particularly:

- A straight alignment, to respect the formality of urban design of the New Town and allow simplest overhead wiring design, along the full length of Princes Street from South Charlotte Street to South St David and St Andrew Streets, and the minimum practical change in alignment at South Charlotte Street;
- A street layout that increases as far as possible the space for pedestrians, whilst maintaining adequate tram run-times and adequate space for bus services including, in particular the footway widening across the nearside traffic lane described above;
- Careful design of the OLE to simplify the layout, balance conductor wire and support cable sizes against support spacing so as to minimise the visual intrusion of the wiring, including detailing and design of wire supports and their arrangement to suit the form of the street, particularly at junctions;
- The use of visually appropriate methods of support, including designing a simple and elegant support column;
- The use of surfacing and kerb materials appropriate to the location, as defined above, including comprehensive wall to wall repaving of footways;
- A coordinated and visually integrated design for the tram stop, creating a high quality pedestrian space; and
- The stop located east of the end of Castle Street so that it does not affect the important designed vista of the Castle from Castle Street