5 Traffic and Transport

5.1 Introduction

This chapter describes the traffic and transport impacts of the scheme including impacts on other road users, pedestrians and cyclists. The assessment has been largely based on information provided from the Line One design team including data on traffic modelling and construction activities.

Section 5.2 describes current transport circumstances; Section 5.3 discusses impacts during construction including impacts on noise and air quality and Section 5.4, impacts during operation. Traffic-related noise and air quality impacts during operation are described in Chapters 13 and 14 respectively.

5.2 Baseline Conditions

5.2.1 Road Network and Traffic Growth

The principal traffic routes into Edinburgh city centre comprise the A8 Corstorphine Road and A90 Queensferry Road from the west and the A900 Leith Walk, B50 London Road and A1 Regent Road from the east, as shown in Figure 5.1. The principal east–west routes in the city centre are provided by the parallel roads of Princes Street and, to the north, Queen Street.

North of the city centre, the A902 Ferry Road forms the principal east-west route, whilst the A901 links the areas of Granton, Trinity, Newhaven and Leith along the coast adjacent to the Firth of Forth. A number of roads provide links from the coastal road to the city centre including (from west to east), the West Granton Access Road, the A903 Granton Road, Craighall Road and Great Junction Street in Leith. The West Granton Access Road, constructed on the alignment of the disused rail line to Granton Harbour, was recently completed to serve the Granton development area.

In general, the roads in the area are predominantly single carriageway with widths limited by extensive frontage development, much of it traditional tenement buildings. Combined with frequent junctions and property accesses, travel speeds on these roads are typical of dense urban areas, with low speeds during the morning and evening peak hours.

During the 1980s and 1990s, commuting into Edinburgh by car rose by 53% \(^1\). However, peak hour traffic into the city centre has remained static in recent years. Traffic growth has occurred both spatially and temporarily where there has been the available capacity to do so and this reflects the impacts of capacity limitations and restrictions on growth in car use and increasing car ownership and economic dispersal outwith the centre.

Forecast trends in traffic and congestion indicate an overall growth in traffic levels by 20% over the 20 years 2001 – 2021, while time lost in traffic due to congestion almost doubles. All areas of the city are expected to suffer from worsened traffic congestion \(^2\). The largest impacts will be concentrated on areas of highest growth. Consequently the highest congestion increases are expected to be on the strategic routes serving the areas of major economic activity around the city: West Edinburgh, the Waterfront, the South East Wedge and the city centre. Increases in congestion will have commensurate effects on bus journey time and reliability.

As well as problems that have been identified with North Edinburgh’s public transport network there are a number of existing and anticipated problems with its road network. Traffic in North Edinburgh is characterised by conflicting north-south and east-west movements and traffic routing is strongly influenced by a number of pinch points in the network. The area experiences significant rat running, with many alternative routes along roads often unsuitable for heavy volumes of traffic.

Between Leith Walk and Queensferry Road, the crossings of the Water of Leith act as pinch points to north-south traffic. In addition, north-south traffic has to cross or use in part a number of heavily trafficked east-west routes, including Ferry Road. Principal routes in North Edinburgh such as Leith Walk, Ferry Road and Queensferry Road all experience peak hour congestion.

A study of public transport in North Edinburgh (1) identified a number of junctions where forecast capacity would be exceeded by 2011. Those which coincide with, or are close to, the tram alignment include:

- Ferry Road/Granton Road;
- Ferry Road/North Junction Street;
- Leith Walk/Pilrig Street;
- Crewe Toll;
- Ferry Road/Craighall Road;
- Trinity Road/Trinity Crescent;
- Great Junction Street/Leith Walk; and
- Granton Square.

A number of other junctions in the North Edinburgh area are predicted to be close to their operational capacity in 2011.

5.2.2 Public Transport Services

Within the City of Edinburgh, public transport serves more than 100 million passenger journeys per year. Over 200 local bus services, using over 800 buses, call at 2,000 stops. There are 7 railway stations within the city area, and the rail network is important for medium and long distance travel to the city centre. In 1999, over 18% of all trips made by Edinburgh residents were made by public transport (2), one of the highest rates of bus use per person in Britain. Public transport is therefore crucial in maintaining the accessibility and economy of the city centre, despite the fact that over the 20 years to 1991, commuting by bus in Edinburgh fell by 39% and bus passenger numbers fell from 171 million in 1981 to 135 million in 1992 (3).

Current bus services in North Edinburgh are operated mostly by Lothian Buses, with some run by First Edinburgh in the Silverknowes area. Existing services run predominantly on radial routes through the city centre on a strong grid pattern. As many services cross the city centre, there are problems of congestion affecting bus journey times and reliability. Leith Walk is the principal bus corridor to the north of the centre, with seven frequent routes serving the city centre to Leith section. There are a further four routes on Inverleith Row and three routes on Crewe Road South.

To mitigate the effect of road traffic congestion on bus journey times, bus priority measures, notably bus only lanes (Greenways), have been implemented on a number of streets including Princes Street, Leith Walk, London Road and Corstorphine Road. Elsewhere, buses run with the general traffic, with associated impacts on journey times. Greenways have significantly improved bus travel, especially to and from the city centre, the Gyle area in the west of the city and the airport.

(3) City Plan for Edinburgh, op cit.
In terms of bus routes paralleling the route of Line One of the tram (outside the city centre), some seven routes operate on Leith Walk. North of the ‘Foot of the Walk’, route 16 effectively duplicates Line One as far as Granton, although it does not enter the Leith and Granton development areas. Short sections of other bus routes also parallel Line One over this section. From Granton to Haymarket, the road network precludes routes directly paralleling Line One; however, the bus routes on Crewe Road South provide for access between the Pilton/Muirhouse/Crewe Toll areas and the city centre.

There are a number of key interchange opportunities between Line One and other public transport services, particularly in the city centre along Princes Street and St Andrew Square, at Haymarket station, and with other bus circular and radial routes.

5.2.3 Walking and Cycling

The route of Line One runs along commercial and retail streets with high numbers of pedestrians. Whilst no formal pedestrian surveys have been conducted on the proposed route, the proposed tram will run adjacent to areas of major pedestrian activity in the city centre and beyond, including:

- Constitution Street in Leith;
- Leith Walk;
- Picardy Place;
- St Andrew Square
- Princes Street
- The West End (Shandwick Place and West Maitland Street); and
- Haymarket.

In Edinburgh there are a number of cycleways forming part of the National Cycle Network (see Figure 5.1). The network consists of designated cycleways located off-street and non-designated cycleways located on-street.

The off-street cycleways include the corridors of the former Roseburn Railway and the former railway corridor from Cannonmills to Leith. Roseburn Railway Corridor was converted into a cycleway and footpath in the early 1980s and is now a well-used and popular recreational resource and cycling commuter route.

The on-street sections of the National Cycle Network include Hanover Street, Queen Street, Frederick Street, St. Andrew Street North and South, St. David Street North and South, Charlotte Square, Melville Street and the A8.

5.3 Construction Impacts

5.3.1 Scope

The assessment has considered a number of potential effects on road users including pedestrian and cyclists, resulting from construction activity and traffic:

- Impacts of in light and heavy traffic using roads in the vicinity of the construction compounds and working areas on traffic flows (eg congestion, additional queues at junctions etc), noise and air quality and other users of streets and footways;

- impacts on traffic and the environment from the vehicles used by construction workers arriving at and leaving construction compounds and working areas each day;
disruption to traffic due to the effects of construction working areas in on-street sections of the tram, including reduction of the available carriageway width; this may result in additional congestion and disruption to journeys, particularly where traffic lights or temporary traffic diversions are required;

temporary disruption to, or suspension of, on-street parking where construction works are required;

disruption to public transport services through the effects of increased traffic congestion, temporary diversions and suspension or movement of bus stops; and

severance effects on pedestrians and cyclists.

Severance can be defined as adverse effects on journeys made by pedestrians and cyclists through changes in journey distance or time and changes in amenity of journeys. Severance effects can result from:

- temporary or permanent diversions of footpaths;
- physical severance caused by the works;
- severance effects from changes in traffic flows (which can deter crossing of roads and/or reduce amenity for users of roadside footways), and
- perceived or psychological severance caused by the works.

The assessment is based on outline information on the location of construction compounds, construction methods and programme (see Appendix A for construction statement), projected levels of light traffic and HGV movements and likely permissible HGV routes. Indicative traffic management and other mitigation measures to be implemented during construction to reduce severance, traffic disruption and disruption to pedestrians and cyclists are identified.

### 5.3.2 Criteria for Evaluation of Construction Traffic Impacts

The Institution of Highways and Transportation Guidelines (1) suggest that impacts on highway capacity are generally unlikely to occur where generated traffic causes baseline two-way traffic flows to increase by less than 10%, or 5% where there are particular sensitivities such as existing congestion. Other guidance (2) on the environmental impacts of traffic suggests that impacts (i.e., traffic noise, traffic-related air quality, severance caused by traffic) are unlikely to be significant where generated traffic increases baseline flows by less than 30%, or 10% where particular sensitivities exist. The main sensitivity in the case of Line One is the Air Quality Management Area (AQMA) in the city centre, which is considered further in Chapter 14.

This assessment has therefore adopted a 10% increase in traffic flows over the baseline as the threshold for potentially significant traffic and environmental impacts. In assessing changes in traffic above this threshold during construction, a degree of flexibility has been applied since construction traffic impacts are by their nature temporary.

Severance effects have been evaluated using the criteria set out in the Design Manual for Roads and Bridges (Volume 11: Environmental Assessment, Section 3: Pedestrians and Community Effects) relating to reduction in the ease or amenity of journeys made by pedestrians and cyclists.

5.3.3 Construction Traffic

It is anticipated that construction activity will occur simultaneously in six sections around the route (see Appendix A for a description of the sections). Within each section, a construction working area of a few hundred metres in length will be established and once work has been completed, the working area will move on in sequence (see Chapter 2 and Appendix A). Delivery and removal of materials to and from these working areas will be sourced from seven construction compounds for which potential sites have been identified in locations spaced approximately evenly around the route and approximately corresponding to the nearest of the six construction sections. The locations of the construction compounds, the extent of the scheme they are likely to service and the potential access routes for each are summarised in Table 5.1 and their locations are shown on Figure 5.2. These sites are indicative of those which may be used as construction compounds around the route, and have been identified to inform the assessment of the traffic and environmental effects of construction of Line One in this ES. The final choice of compound locations and the responsibility for agreements with landowners for these, or other, construction compounds will be the responsibility of the contractor or concessionaire for the tram.

HGVs will transport materials between the construction working areas and the compounds. HGVs will also import materials to the compounds from a variety of external sources. Approximate numbers of movements are identified in Table 5.1.

It is envisaged that one main compound, the proposed depot site at Leith, will accommodate the general site office and amenity areas, storage areas for large items of plant and facilities for testing and commissioning. This compound will also service construction working areas in Leith and Newhaven. It is expected that there will be approximately 8 HGV movements (4 in; 4 out) per hour at this main compound site throughout the majority of the 36 month construction programme. Light traffic movements are also predicted at the main compound, and these have been estimated at 40 vehicle movements per hour during working hours. At the six smaller compounds it is expected that there will be approximately 4 HGV movements per hour (2 in; 2 out). In addition, approximately 20 light vehicle movements per hour are anticipated.

Traffic will also move to and from working areas along the route independently of construction compounds. This will be mainly HGV tippers removing surplus spoil, road planings and other excavated materials to remote storage areas, construction waste recycling facilities or landfills. A number of light vehicles such as specialist contractors and site supervisors will also access working areas directly.

Areas of construction that will have greater excess material (such as the former railway corridor) will experience a higher frequency of traffic movements than the on-street sections. There may be up to three working areas along the Roseburn Railway Corridor with excavation activities occurring simultaneously during early stages of the programme. During these periods a total of 24 HGV movements per hour may be generated, although the HGVs are predicted to access each working area from different locations (see Section 5.3.5).

On other sections, there are estimated to be approximately 4 HGV movements per hour from each working area to remove road planings and other excess materials from the sites.

Further HGV movements will arise at locations of works to structures (Roseburn Terrace Bridge, the Craigleith Drive Bridge and the Coltbridge Viaduct). These activities will be of limited duration (1-2 months) and only the widening works for the bridge at Craigleith Drive will require HGV access along residential roads (the other two can be accessed along the railway). There will also be occasional deliveries of large plant and tram vehicles from Leith Docks or other import points. Routes for these will be defined and agreed in advance.
### Table 5.1 Construction Compounds

<table>
<thead>
<tr>
<th>Compound Location</th>
<th>Extent of Route Served by Compound</th>
<th>Vehicle Movements/Hour</th>
<th>Key Access Routes</th>
<th>To and From Compound</th>
<th>Between Compound and Working Areas</th>
</tr>
</thead>
</table>
| 1. Development site at Morrison Street/Haymarket | Shandwick Place, West Maitland Street, Haymarket, Haymarket Terrace, Haymarket Yards | • 4 HGVs  
• 20 light vehicles | From the west: A8 Corstorphine Road to Haymarket  
From the east: Queen Street, Shandwick Place, West Maitland Street  
From the south: A71 Dalry Road to Haymarket | Via direct access onto Morrison Street and Haymarket Junction |
| 2. Roseburn Terrace Bridge | Southern section of the alignment along former Roseburn Railway Corridor | • 4 HGVs  
• 20 light vehicles | From east and west: via A8 Haymarket Terrace | Via direct access from compound onto railway corridor |
| 3. Fire Training Ground, Ferry Road | Northern section of the alignment along former Roseburn Railway Corridor  
West Granton Access Road | • 4 HGVs  
• 20 light vehicles | From east and west: via A902 Ferry Road | Via direct access from compound onto railway corridor |
| 4. Site at Granton Crescent/Granton View (Granton Square) | Alignment through Waterfront Edinburgh Site  
West Harbour Road and Lower Granton Road | • 4 HGVs  
• 20 light vehicles | From the west: West Granton Road & Granton Square  
From the east: Lower Granton Road & Granton Square  
From the south: Ferry Road, Granton Road & Granton Square | Via access from site to Granton Square then direct to West Granton Road or Lower Granton Road |
| 5. Site of Proposed Depot, Constitution Street | Northern section of Leith Walk & Constitution Street  
Ocean Drive, Lindsay Road, Starbank Road, Lower Granton Road | • 8 HGVs  
• 60 light vehicles | From the south: Leith Walk & Constitution Street  
From the east: Salamander Street & Constitution Street  
From the west: Commercial Street | Via Constitution Street (to the south) or Ocean Drive (to the west) |
| 6. Halmyre Street/Smith’s Place (Leith Walk) | Central and southern section of Leith Walk | • 4 HGVs  
• 20 light vehicles | From the north and south: Leith Walk  
No access to site from Easter Road or residential streets to the west including Halmyre Street | Via Leith Walk |
| 7. Waverley Station car park, New Street | Picardy Place, Queen Street, St Andrew Square, Princes Street | • 4 HGVs  
• 20 light vehicles | Inbound: via Leith Street, Calton Road & New Street  
Outbound: via New Street, Calton Road, Abbeyhill, Regent Road & London Road | For all sections other than western Princes Street: Via New Street, Calton Road, Abbeyhill & Regent Road  
For western Princes Street: Via New Street, Market Street & Waverley Bridge |
Works to the seawall at Starbank Road will require HGV movements for the period of construction of the walkway in addition to those for the tram construction working areas. An additional 2 HGV movements per hour have been assumed.

The final source of traffic will be personnel travelling to and from the site. The project is expected to employ a maximum of approximately 850 people at any one time. Of these, approximately 150 will be administrative and supervisory staff (assumed to be based in a number of locations) with the remaining 700 being construction staff spread over the construction working areas.

Assuming a maximum of 120 personnel at each construction section at any one time and car occupancy of 1.3 personnel per vehicle (typical for construction projects), there could be approximately 90 vehicles arriving at the beginning of the working day (ie on site by 07:00) and departing at the end of the day (by 19:00). In practice restrictions on parking space at all sites except the main work site near Leith Port and shift operations will constrain and distribute this traffic so that the number of cars arriving in any hour will be lower than this. Morning and evening workforce movements will be outside the network peak periods.

Construction personnel will be encouraged to access work sites using public transport wherever possible.

The following sections discuss the predicted impacts of construction and proposed mitigation measures relating to:

- other road traffic and the environment;
- construction access;
- road diversions and closures;
- parking and access;
- public transport services;
- walking and cycling.

### 5.3.4 Impacts of Construction Traffic on Traffic Flows

The key effects of construction traffic for each of six construction sections along the route are presented in Table 5.2. Predicted changes in traffic flows on key access roads to compounds and construction working areas are reported.

The assessment indicates that in most locations, the estimated movements during construction will not give rise to significant changes in traffic flows, although slight localised traffic disruption may be caused due to access and egress to and from construction compounds onto adjacent roads. At two locations near the compounds at Constitution Street and New Street, there is the potential for traffic and amenity impacts.
<table>
<thead>
<tr>
<th>Section</th>
<th>Hourly Traffic Generated</th>
<th>Key Routes Affected</th>
<th>Predicted Impacts</th>
</tr>
</thead>
</table>
| 1. Haymarket and Haymarket Yards | Traffic from the compound at Haymarket and traffic accessing work sites:  
- 8 HGVs  
- 20 light vehicles | Vehicles moving between compound and worksite will use Haymarket Terrace. HGVs accessing work site likely to use A8 Corstorphine Road and Haymarket Terrace | Increases in hourly traffic on key routes such as Haymarket Terrace and Dalry Road will be slight (less than 4% in the off peak, less than 2% in the peak). HGVs accessing Haymarket Yards from Haymarket Terrace may slightly affect traffic flows. No significant environmental impacts are predicted. |
| 2. Roseburn to Telford Road | Traffic from the compound at Roseburn Terrace Bridge and traffic accessing the railway corridor:  
- 16 HGVs  
- 20 light vehicles | Vehicles will access the compound and the railway corridor directly from the A8 at Roseburn Terrace | Increases in hourly traffic on Haymarket Terrace and Corstorphine Road from construction traffic will be slight (less than 4% in the off peak, less than 3% in the peak). HGVs accessing Roseburn Terrace from the compound and railway are predicted to cause some delay and congestion at the traffic signalled junction. No significant environmental impacts are predicted from vehicle movements on the A8 or along the railway corridor. Increased congestion at Haymarket Terrace junction may give rise to slightly higher concentrations of local air pollutants from stationary vehicles in queues. |
| 3. Telford Road to Lower Granton Road | Traffic from the compound at the Fire Training Ground on Ferry Road and traffic accessing the railway corridor:  
- 16 HGVs  
- 20 light vehicles | Vehicles will access the compound and the railway corridor directly from the A902 Ferry Road | Increases in hourly traffic on Ferry Road from construction traffic will be slight (less than 3% in the off peak and peak). HGVs accessing Ferry Road from the compound and railway may cause slight delay to traffic at the junction of Ferry Road and West Granton Access Road, although this is not a congested junction. No significant environmental impacts are predicted from vehicle movements on Ferry Road or along the railway corridor. |
| 4. Lower Granton Road to Starbank Road | Traffic from the compound at Granton Square and traffic accessing work sites:  
- 8-12 HGVs (vehicles bound for Starbank Road may pass through Granton)  
- 20 light vehicles | Vehicles will access the compound and the work sites via either West Granton Road (coming from the west) or Granton Road (coming from the south) | Increases in hourly traffic from construction traffic will be small on Granton Road (6% in the off peak, 2% in the peak) and slight on West Granton Road (3% in the off peak, 2% in the peak). HGVs accessing the compound may cause some disruption to local traffic on Granton Crescent and Granton Drive and reduction in amenity for residents on these streets adjacent to the compound. |
### Section Hourly Traffic Generated

<table>
<thead>
<tr>
<th>Section</th>
<th>Key Routes Affected</th>
<th>Predicted Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Starbank Road to</td>
<td>Vehicles will access the depot compound via Leith Walk and Constitution Street or via</td>
<td>Some increases in hourly traffic are predicted on Constitution Street (9% in the off peak, 6% in the peak). The increase in HGV traffic is also less than 10%. This increase in traffic is slight on Salamander Street (less than 5% in the off peak and peak). Some reduction in amenity is predicted for residents in the flats opposite the depot site on Constitution Street.</td>
</tr>
<tr>
<td>Picardy Place</td>
<td>Salamander Street.</td>
<td>HGV traffic on Leith Walk accessing the compound at Halmyre Street and work sites on Leith Walk is predicted to increase traffic slightly (3% in the off peak, 2% in the peak), although HGVs turning onto Smith’s Place may cause some traffic disruption. If this traffic accesses Leith Walk from London Road, it is not predicted to have significant traffic or environmental impacts as flows will not increase by more than 4%.</td>
</tr>
<tr>
<td></td>
<td>6 HGVs at Starbank</td>
<td>HGV traffic accessing working sites and the seawall construction works at Starbank will increase traffic flows on Starbank Road and Commercial Street by less than 2%. No significant traffic or environmental impacts are predicted.</td>
</tr>
<tr>
<td></td>
<td>8 HGVs and 60 light vehicles at depot site</td>
<td></td>
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<tr>
<td></td>
<td>8 HGVs and 20 light vehicles on Leith Walk</td>
<td></td>
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<tr>
<td></td>
<td>Vehicular traffic from the compounds at Constitution Street and Halmyre Street and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>traffic accessing work sites:</td>
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<tr>
<td></td>
<td>• 6 HGVs at Starbank</td>
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</tr>
<tr>
<td></td>
<td>• 8 HGVs and 60 light vehicles at depot site</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 8 HGVs and 20 light vehicles on Leith Walk</td>
<td></td>
</tr>
<tr>
<td>6. Picardy Place to</td>
<td>Vehicular traffic from the compound at New Street and traffic accessing work sites:</td>
<td>Construction traffic will not significantly affect traffic flows on key routes such as London Road, Leith Street or Regent Road. On Abbeyhill slight increases (3% off peak, 4% peak) in traffic are predicted. On Calton Road and Market Street significant traffic increases of between 20% and 27% are predicted off peak, but only 5% in the peak. There are relatively few sensitive receptors along these streets, however the roads are narrow with awkward junctions and not suited to large amounts of HGV traffic. They are also used extensively by pedestrians including tourists and visitors walking from the city centre to the Old Town and Holyrood House at the eastern end of Calton Road. It is predicted that the amenity of these pedestrians and any cyclists would be significantly affected during construction.</td>
</tr>
<tr>
<td>Haymarket</td>
<td>• 8 HGVs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 20 light vehicles</td>
<td></td>
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<tr>
<td></td>
<td>Vehicular traffic from the compound at New Street</td>
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<td></td>
<td>Vehicular traffic from the compound at New Street</td>
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<tr>
<td></td>
<td>Vehicular traffic from the compound at New Street</td>
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</tr>
</tbody>
</table>

Note: Percentage changes in traffic flows on key access roads presented in this table have been estimated by comparing the predicted numbers of construction vehicles for each construction section with the forecast 2011 off peak and peak hour traffic flows from the traffic model.
Based on the criteria in the guidelines discussed above, it is not anticipated that construction traffic will lead to significant traffic-related environmental impacts in terms of traffic noise and air quality. However, it is possible that construction traffic movements will lead to a reduction in amenity in the following areas:

- residential properties at the northern end of Constitution Street opposite the access to the depot site construction compound;
- a small number of residential properties on the roadside of Calton Road and Market Street in the Old Town area of the city;
- residential roadside properties close to Roseburn Terrace where congestion already occurs during peak periods and may be exacerbated by the proposed construction compound close to the junction between Roseburn Terrace and Roseburn Street;
- residential properties close to the access to the compound in Granton, particularly those on Granton Crescent and Granton View; and
- pedestrians and cyclists in all of the above areas.

The city centre of Edinburgh has been declared by CEC as an Air Quality Management Area (AQMA). Whilst any change in traffic flows of more than 5-10% would give rise to concern regarding potential air quality impacts, the absolute numbers of construction vehicles predicted in the city centre areas is relatively small and the increases will be limited to the period of construction of the tram only.

### 5.3.5 Impacts from Construction Access

Access to working areas will vary according to the constraints of each construction section. There should be sufficient space on the on-street sections to accommodate construction vehicles. Delivery and pick-up points will be assigned for each construction section, order to minimise potential disruption to local traffic and services.

On the major off-street section of the scheme along the Roseburn Railway Corridor, access opportunities are limited by the difference in level between the formation and surrounding roads, especially between Roseburn Terrace and Groathill Road South. It is likely that the railway corridor will be accessed at either end (**ie** Ferry Road at the north end and either Haymarket Yards or Roseburn Terrace in the south) and vehicles will then travel along the railway corridor to access the construction. Level access to the railway corridor can also be achieved from South Groathill Avenue near Craigleith Retail Park.

The contractor, in consultation with the local planning authority, will determine the location of these temporary access roads and access points and the designated routes for arrival/departure of HGVs will be carefully managed to minimise the potential for queues and other traffic impacts. HGVs will access compounds and work sites using only major routes appropriate for such vehicles. These routes will be agreed with CEC in advance. Staggered arrival and departure times for personnel and plant will be used to minimise disruption to traffic and disturbance to residents in the vicinity of construction compounds. The contractor will provide vehicle wheel washing facilities at all construction compounds.

### 5.3.6 Traffic Diversion and Closures

It is likely that traffic diversions will be required at a number of locations along the route at any one time and alternative routes will be provided. In most instances, on-site diversions will be used and traffic managed through signing and use of traffic cones. This may require temporary narrow lanes alongside working areas. Where traffic in both directions cannot be maintained, temporary traffic lights will be used but this is likely to cause significant congestion and will be avoided wherever possible, especially during peak periods.
Construction works will involve the temporary closure of roads at Groathill Road South and Craigleith Drive. Diversions along alternative routes will be signed. Diverted traffic is likely to cause significant impacts on local roads around these locations for the duration of the diversion. In particular, construction of the tram alignment at major junctions and road crossings will cause significant traffic impacts. The duration of construction activities required to complete a junction will depend on the junction size, type, complexity and the traffic flow(s) to be diverted.

The objective will be to minimise the impact on the surrounding road network by:

- constructing the route in manageable sections;
- ensuring that local diversions are in place;
- ensuring that construction activities take place at appropriate times (eg use of night closures where appropriate);
- introducing temporary traffic management regulations to minimise impact of parking and servicing on the flow of traffic;
- working closely with the public utility companies to ensure that diversionary measures are minimised; and
- timely completion of the works.

The impact on traffic flows at junctions will be examined further before decisions are made on construction methods and mitigation.

Prior to any works being carried out on any section of the route, the contractor’s traffic management proposals will be submitted to CEC for approval. The Emergency Services will also be consulted as appropriate. Routes normally used by emergency vehicles and for refuse collection will be identified and maintained, or acceptable alternatives provided.

5.3.7 Impacts on Parking and Access

Parking and loading/unloading spaces are provided along many of the streets in Edinburgh affected by construction of the tram. For the duration of construction in these areas, the use of parking bays and loading bays will be suspended. Parking in any one location will not be disrupted for more than a few weeks. Vehicle access to a small number of properties will also be prevented for short periods during construction.

5.3.8 Public Transport Services

Construction activities will disrupt bus services along on-street sections by restricting road traffic lanes and lane widths, and closing bus stops and bus bays for temporary periods, in particular where bus services currently use Greenways on for example, Princes Street and Leith Walk. The construction works will cause some to delay bus services and reduce their reliability for the duration of work in each section. The impact will be kept to the minimum possible by effective traffic management and by timely completion of the works.

Construction will also require temporary diversion of some bus routes for short periods. The requirement for such diversions will be discussed in advance with the bus operators and CEC.

5.3.9 Impacts on Walking and Cycling

Construction along on-street sections will cause significant severance for pedestrians. Where footpaths are temporarily closed, alternative paths will be identified, in particular to maintain access to homes, businesses, recreational and educational facilities etc. Residents in properties facing streets where the tram alignment will be constructed will experience disruption to their access for a period of several weeks as the construction works pass their property.
The Roseburn Railway Corridor footway and cycleway is expected to be closed for safety reasons in areas where construction is taking place. This is likely to affect most, if not all, of the section used for the tram. The contractor, in consultation with CEC and other stakeholders such as access and cyclist groups, will identify diversions during construction. The alternative route will be signposted and designed to maintain existing levels of accessibility for cyclists as far as possible.

Construction of the on-street sections of the scheme that coincide with the National Cycle Network will result in temporary closure and diversion of the cycle paths. These roads include North and South St Andrew Street, and North and South St David Street.

5.4 Traffic Impacts During Operation

5.4.1 Scope and Approach

This section describes impacts on traffic, pedestrians and cyclists during operation of Line One. These may result from permanent alterations and modifications to roads to accommodate the scheme and through the effect of tram operation on traffic flows and conditions for pedestrians, cyclists and public transport.

Changes in road traffic as a result of the scheme could arise from:

- displacement of traffic from on-street sections of the tram alignment due to a reduction in overall capacity of the road in these sections;
- permanent diversions of road traffic implemented as part of the tram scheme (e.g. road closures or restrictions on right turning traffic movements across tram lanes); and
- modal shift of traffic from private cars (and buses) to trams.

These effects have been modelled using transport and traffic assignment models. Traffic data are obtained directly from the TRIPS based Detailed Assignment Model (DAM). The DAM highway model forms one element of a suite of transport models developed on behalf of CEC, and has its origins in the Central Scotland Transport Model Version 3 (CSTM3). For this project the DAM highway model has been used to assess the volumes of traffic throughout the city and surrounding network under two scenarios as follows:

- a Do Minimum (or reference case) scenario against which the Line One proposals are compared in future years; and
- a With Scheme Line One Scenario.

These scenarios have been modelled for two years, 2011 and 2026. The demand in the forecast years has been derived using Land Use Transportation Integration (LUTI) models. These predict demand for travel based on land use patterns, taking into account growth in population, employment and retail activity. The basic demand is apportioned to either the public transport or highway assignment models using a mode choice model to derive the public transport and highways demand matrices for each scenario.

The DAM model has been used to predict flows on the road network, and a public transport model to predict flows of buses. Outputs have been used for a number of purposes including design and testing of road traffic junctions and assessment of the noise and air quality impacts of predicted changes in road traffic. The outputs are used in this chapter to provide the basis for a commentary on the effects of tram operation on traffic. The chapter also addresses other effects of the tram’s operation including impacts on pedestrian and cyclists and severance. Mitigation measures to address these effects have been included where appropriate. Impacts of operational traffic changes on noise and air quality are discussed in Chapters 13 and 14.
The following impacts are discussed below:

- impacts on road traffic flows;
- impacts of changes in road layout;
- severance for pedestrians;
- severance for cyclists;
- impacts on buses;
- impacts on taxis.

The final section discusses the effect of traffic movements by the tram workforce coming to and from work.

5.4.2 Impacts of Operation on Traffic Flows

The operation of the scheme will result in altered traffic movements and modal shift away from private transport to public transport. Predicted changes in traffic flows in 2011 are shown for key routes in Table 5.3. These predictions do not take into account the effects of the CEC’s proposed Central Edinburgh Traffic Management (CETM) scheme, since these proposals were not committed at the time the traffic modelling was undertaken for Line One. It should be noted that this is not a comprehensive list of every road where there will be changes in flow but a summary of the links that would be most affected, as predicted from the modelling work undertaken during development of the scheme.

<table>
<thead>
<tr>
<th>Route</th>
<th>Do Minimum</th>
<th>With Scheme</th>
<th>Absolute Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AM OP PM</td>
<td>AM OP PM</td>
<td>AM OP PM</td>
</tr>
<tr>
<td>Palmerston Place</td>
<td>543 347 704</td>
<td>900 550 1099</td>
<td>357 203 395</td>
</tr>
<tr>
<td>Chester Street</td>
<td>1045 838 838</td>
<td>996 776 726</td>
<td>-49 -62 -112</td>
</tr>
<tr>
<td>Queensferry Street</td>
<td>1470 1159 1478</td>
<td>1601 1402 1606</td>
<td>131 243 128</td>
</tr>
<tr>
<td>George Street</td>
<td>1153 993 1222</td>
<td>1190 1088 1284</td>
<td>37 95 62</td>
</tr>
<tr>
<td>Queen Street</td>
<td>2355 2329 2302</td>
<td>2382 2447 2407</td>
<td>27 118 105</td>
</tr>
<tr>
<td>The Mound</td>
<td>1395 1277 1283</td>
<td>1513 1282 1288</td>
<td>118 5 5</td>
</tr>
<tr>
<td>London Road</td>
<td>1283 889 1442</td>
<td>1101 682 1345</td>
<td>-182 -207 -97</td>
</tr>
<tr>
<td>MacDonald Road</td>
<td>683 316 786</td>
<td>370 342 683</td>
<td>-313 26 -103</td>
</tr>
<tr>
<td>Pilrig Street</td>
<td>509 335 832</td>
<td>511 369 855</td>
<td>2 34 23</td>
</tr>
<tr>
<td>Salamander Street</td>
<td>1666 1545 1622</td>
<td>1587 1526 1595</td>
<td>-79 -19 -27</td>
</tr>
<tr>
<td>Ferry Road</td>
<td>1395 1277 1283</td>
<td>1513 1282 1288</td>
<td>118 5 5</td>
</tr>
<tr>
<td>Inverleith Row</td>
<td>1988 1089 2117</td>
<td>1869 1008 2139</td>
<td>-119 -81 22</td>
</tr>
<tr>
<td>Crewe Road (N)</td>
<td>739 853 1035</td>
<td>675 847 1012</td>
<td>-64 -6 -23</td>
</tr>
<tr>
<td>Crewe Road (S)</td>
<td>969 436 806</td>
<td>929 443 794</td>
<td>-40 7 -12</td>
</tr>
<tr>
<td>Telford Road</td>
<td>1847 1161 1234</td>
<td>1832 1156 1287</td>
<td>-15 -5 53</td>
</tr>
<tr>
<td>Queensferry Road</td>
<td>1808 1486 1788</td>
<td>1852 1646 1860</td>
<td>44 160 72</td>
</tr>
<tr>
<td>Haymarket Terrace</td>
<td>1518 1075 1314</td>
<td>1227 721 970</td>
<td>-291 -354 -344</td>
</tr>
<tr>
<td>Dalry Road</td>
<td>1323 746 1468</td>
<td>1217 606 1656</td>
<td>-106 -140 188</td>
</tr>
<tr>
<td>Morrison Street</td>
<td>1371 1295 1833</td>
<td>1978 1439 1908</td>
<td>607 144 75</td>
</tr>
<tr>
<td>Easter Road</td>
<td>514 454 493</td>
<td>421 486 581</td>
<td>-93 32 88</td>
</tr>
<tr>
<td>West Granton Road</td>
<td>2139 1160 2053</td>
<td>2085 1116 2038</td>
<td>-54 -44 -15</td>
</tr>
<tr>
<td>Granton Road</td>
<td>1511 536 1405</td>
<td>1504 527 1406</td>
<td>-7 -9 1</td>
</tr>
<tr>
<td>Leith Walk (Central/North)</td>
<td>1247 957 1280</td>
<td>1201 895 1199</td>
<td>-46 -62 -81</td>
</tr>
<tr>
<td>Constitution St (South of junction with Salamander St)</td>
<td>674 535 855</td>
<td>744 510 922</td>
<td>70 -25 67</td>
</tr>
<tr>
<td>Constitution St (North of junction with Salamander St)</td>
<td>1187 728 1104</td>
<td>1175 724 1093</td>
<td>-12 -4 -11</td>
</tr>
<tr>
<td>Starbank Road</td>
<td>1672 1390 1589</td>
<td>1585 1365 1560</td>
<td>-87 -25 -29</td>
</tr>
<tr>
<td>Commercial Street</td>
<td>1108 1070 1325</td>
<td>1063 1047 1325</td>
<td>-45 -23 0</td>
</tr>
<tr>
<td>Market Street</td>
<td>547 103 594</td>
<td>576 100 478</td>
<td>29 -3 -116</td>
</tr>
</tbody>
</table>
The data indicate that in 2011 there will be decreases in traffic flows on some roads and increases on others. However, in the majority of cases the impact will be minimal. The reason for this is that the design for the alignment of the tram and the configuration of junctions has been developed to accommodate all types of motor vehicle. This minimises the displacement effect of tram operations on other traffic. The introduction of the tram also results in an element of modal transfer from car to public transport, thereby reducing the number of private cars in the city centre.

As would be expected in a congested urban centre the patterns differ throughout the day. Generally the impacts in the off peak periods are less significant than those predicted during the peak hours.

Reductions in the volume of traffic are predicted at:

- Haymarket Terrace;
- Chester Street;
- London Road;
- Dalry Road (am and off peak);
- Market Street (pm peak); and
- MacDonald Road.

Roads where the greatest level of increase is predicted include:

- Palmerston Place;
- Queensferry Street;
- George Street;
- The Mound (am peak)
- Ferry Road (am peak)
- Queen Street;
- Queensferry Road;
- Morrison Street;
- Easter Road (off peak and pm peak); and
- Dalry Road (pm peak).

The re-assignment impacts from the tram have also been modelled for the future year 2026 and the patterns are found to be very similar to those reported above, albeit with the absolute levels of traffic flow being higher under each case.

Increases are largely due to the displacement of traffic by the tram onto these streets as a result of reductions in road capacity on streets used by the tram. There will also be an element of re-routing of traffic in areas where traffic movements are altered to accommodate the tram, for example at Haymarket, where Morrison Street will become two way and a westbound contra flow bus lane will be introduced within West Maitland Street. The proposed layout for the junction of Lothian Road and Princes Street will necessitate the banning of the right turn movement from Shandwick Place to Lothian Road. This will result in a re-routing of traffic in this area of the city.

<table>
<thead>
<tr>
<th>Route</th>
<th>Do Minimum</th>
<th>With Scheme</th>
<th>Absolute Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calton Road</td>
<td>557</td>
<td>582</td>
<td>20 -6 -66</td>
</tr>
<tr>
<td>Abbeyhill</td>
<td>710</td>
<td>854</td>
<td>-6 11 -57</td>
</tr>
<tr>
<td>Lothian Road</td>
<td>Flow to be inserted</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: AM = morning peak hour traffic flow, OP = inter peak hourly traffic flow, PM = evening peak hour traffic flow. The Reference Case is the situation without the tram operating.
As the final details of the scheme are developed appropriate mitigation measures will be introduced to ensure that the transport network works efficiently in these areas. These will vary according to the location and the range of amenities in the immediate vicinity, but could include:

- appropriate signing to encourage traffic to use appropriate routes;
- local traffic management measures to reduce the effect of the tram on junctions including changes to signal timings;
- provision of alternative routes for local residents;
- incorporation of traffic calming measures to discourage traffic from using residential streets (e.g. the streets to the east and west of Leith Walk);
- review of parking and servicing provision on the adjacent local road network; and
- provision of adequate parking for affected residents (e.g. Granton Road).

Further modelling will be undertaken to take account of the CETM proposals and the findings will inform the design of detailed mitigation for the scheme.

### 5.4.3 Impact of Changes in Road Layout

To maintain an optimum level of service for the on-street sections of the tram, some junctions will be remodelled with revised signal priority given to the tram. These junctions, shown in Figure 5.2, include the following:

- West Granton/West Granton Access Road;
- West Granton Access Road/Ferry Road;
- Haymarket Yards/Haymarket Terrace;
- Haymarket Terrace/Dalry Road/Morrison Street/West Maitland Street/Grosvenor Street;
- West Maitland Street/Palmerston Place/Torphichen Street;
- Shandwick Place/Rutland Street/Lothian Road;
- Princes Street/South Charlotte Street;
- Princes Street/The Mound/Hanover Street;
- North St. David’s Street/Queen Street/York Place/North St. Andrew’s Street;
- St. Andrew’s Square North;
- St. Andrew’s Square South;
- South St. David’s Street/Princes Street/South St. Andrew’s Street;
- Picardy Place/Broughton Street/York Place/Leith Street/Leith Walk;
- Leith Walk/London Road/Elm Row;
- Leith Walk/Duke Street/Great Junction Street/Constitution Street;
- Constitution Street/Bernard Street/Baltic Street;
- Newhaven Place/Pier Road/Lindsay Road;
- Pier Place/Starbank Road/Craighall Road;
- Trinity Crescent/Lower Granton Road; and
- West Harbour Road/West Granton Road.

Detailed junction design and traffic assessment testing\(^{(1)}\) has been undertaken to ensure that the redesign of junctions to integrate the tram system does not significantly disbenefit other road users and traffic. Remodelling is therefore not expected to increase vehicle delay or queuing of traffic to any significant extent. Notwithstanding this, there will be some impacts on particular traffic movements at key junctions within the city centre. As the detailed layout is progressed these impacts will be minimised through local traffic management measures and signal timings.

In addition to changes at junctions, there will be some necessary alterations to roads along the tram route in order to maintain an effective run-time for the tram. These are presented below in Table 5.4. Certain of these changes may require separate traffic regulation approvals outwith the powers provided by a Parliamentary Bill.

### Table 5.4 Permanent Traffic Management Measures

<table>
<thead>
<tr>
<th>Road</th>
<th>Proposed Modifications to Traffic Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haymarket Yards</td>
<td>Provision of alternative road</td>
</tr>
<tr>
<td>Rosebery House</td>
<td>Provision of new access to car park</td>
</tr>
<tr>
<td>Morrison Street</td>
<td>No right turn into Grosvenor Street and West Maitland Street</td>
</tr>
<tr>
<td>Haymarket Junction</td>
<td>Restrictions on parking and servicing</td>
</tr>
<tr>
<td>Shandwick Place</td>
<td>No right turn into Lothian Road</td>
</tr>
<tr>
<td>Princes Street</td>
<td>Prohibiting of private vehicles, goods vehicles and taxis in westbound direction</td>
</tr>
<tr>
<td>Picardy Place</td>
<td>Restrictions on parking and servicing</td>
</tr>
<tr>
<td>Leith Walk</td>
<td>Restrictions on parking and servicing</td>
</tr>
<tr>
<td>Leith Walk</td>
<td>No right turn into a small number of streets</td>
</tr>
<tr>
<td>Leith Walk</td>
<td>Left in and left out arrangement at a small number of streets</td>
</tr>
<tr>
<td>Constitution Street</td>
<td>Restrictions on parking and servicing behind Nos. 74-80</td>
</tr>
<tr>
<td>Ocean Drive</td>
<td>Stopping up of part of former Ocean Drive and replacement access for properties on north side</td>
</tr>
<tr>
<td>Canning Street</td>
<td>Stopping up of north end</td>
</tr>
<tr>
<td>Stafford Street</td>
<td>Stopping up of south end</td>
</tr>
<tr>
<td>Frederick St</td>
<td>Stopping up of south end</td>
</tr>
<tr>
<td>Elgin House</td>
<td>Stopping up of cul de sac to the north</td>
</tr>
</tbody>
</table>

In most of the above instances the impacts will primarily affect parking and servicing along the tram route rather than general traffic movements. Where banned turns are introduced alternative routes will be provided. In the case of Leith Walk measures will be taken to ensure that local residents are not impacted as they travel to and from their residence. For example, where banned turns are introduced the adjacent junction on Leith Walk could be signalised to allow controlled right turn movements.

The banning of right turn movements from Morrison Street to Grosvenor Street and West Maitland Street and from Shandwick Place to Lothian Road will result in re-assignment of traffic over a wider area.

### 5.4.4 Severance of Pedestrian Activity

Line One is predicted to result in some severance effects along the entire tram route, as tram infrastructure and tram vehicle operations introduce a new element to traffic using the existing streets (1). This may discourage crossing of streets, in particular by the elderly, mobility impaired and push chair users and create or increase the perception of a ‘barrier effect’ along the route. Because the tram will be a new type of transport for people in Edinburgh there is likely to be a higher degree of severance and possible fears about safety at the start, particularly in areas with high pedestrian activity and close proximity to the tram alignment such as in the city centre. The tram infrastructure and vehicles will be designed to minimise this by integration with the surrounding townscape in accordance with the Design Manual (see Section 2.4) and the impact is expected to decline with time as people become familiar with the tram operations.

Pedestrian severance effects are predicted to be greatest for users of the footway along the Roseburn Railway Corridor. Although the alignment will incorporate a combined walkway and cycleway throughout is length, there will be a considerable change in the actual and perceived nature and amenity of the route due to physical changes in setting (see Chapter 8) and trams operating alongside the footway. Against this, public consultation has indicated that there are personal safety concerns in

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(1) STAG suggests that all population within a 300m corridor may be affected.
the corridor at present, and development of a formalised walkway with a regular tram presence is predicted to reduce the incidence and fear of crime.

The development and operation of the tram along the former railway corridor may also result in slight severance for properties located adjacent to the corridor. However, all of the present crossing points over and under the railway will be maintained, and pedestrian access to the walkway will be provided at all the current access points. Separate pedestrian access will be provided by walkways to tram stops along the corridor.

The tram is not predicted to result in any permanent realignment to existing walking routes, footpaths or rights of way except at Starbank Road where the footway will be realigned slightly on a new structure over the seawall. All pedestrian crossing points for the on-street and off-street sections of the tram will be maintained or locally relocated. New signalised pedestrian crossings will be provided at each tram stop to facilitate ease of pedestrian access to the platforms (see Section 2.2.6). An increased number of formal pedestrian crossing facilities will be provided along Leith Walk.

5.4.5 Severance for Cyclists

Throughout the on-street running sections of the route the designs have incorporated improved facilities for cyclists. Particular measures include:

- incorporation of cycle lanes segregated from tram tracks; and
- provision of advanced cycling stop lines at key junctions.

These measures will help to ensure that facilities for cyclists along the on-street section of the tram alignment are at least maintained, and in some cases improved compared with the current situation. Further details of the specific measures at key locations, including junctions, are detailed within the Traffic Interface Report (1). Tram stops will be integrated with cycleways and cycle parking facilities will be provided at many tram stops in order to encourage integration of modes. It is also an aspiration of CEC that tram vehicles will be able to accommodate the carriage of bicycles, and this issue is being considered further.

There may be some impacts on cyclists where they cross tram rails, in particular at junctions where tram tracks turn across the road carriageway. These effects will be minimised through provision of separately marked routes for cyclists, carriageway markings to advise cyclists of safe areas to cross rails and minimising the groove in rails to prevent accidental catching of cycle wheels in rails.

In the Roseburn Railway Corridor, there will be a change in the cycling provision, as development of the tramway will reduce the cycle lane width compared with the current alignment. The combined cycleway and footway is likely to have a design width of approximately 3m and to be reduced to approximately 2m for short distances under some bridges. The level formation of the cycle track will be maintained and a permanent cycleway surface will be laid.

5.4.6 Impacts on Bus Services

Throughout the majority of the route it is proposed that bus stops would remain in their existing location. The exceptions to this are on:

- Princes Street, where the location of bus stops will be reviewed as part of a detailed review of services, as the details of the alignment are progressed; and
- Leith Walk, where buses stop at the kerbside and to ensure the efficient operation of the route relocation of some stops may be necessary.

(1) Op cit.
Where the tram will run on an integrated alignment with road traffic, buses will share road space with trams. Where road width is limited, there may be potential for slight conflicts between buses and trams, however, in most locations, provision has been made for buses either through combined tram/bus public transport corridors (such as on Leith Walk), extended bus bays (Princes Street) or provision of traffic lanes around on-street tram stops to allow buses and other traffic to pass tram vehicles which are stationary.

A number of assumptions have been made about bus services which parallel (at least along part of their route) the alignment of Line One. It has been assumed in the transport modelling for Line One that fewer buses would be run along these corridors (as some patronage would be transferred to the tram) and that some rationalisation of bus services would occur.

The development of the tram system is predicted to have significant overall public transport benefits through the provision of a high quality, rapid public transport system linking a number of key areas of housing, commercial development, transport interchanges and the city centre. The alignment of the route includes tram stops which are closely located to three major city centre transport interchanges:

- St Andrew Street stop is located close to the new bus station at St Andrew Square and Waverley Railway Station;
- the tram stop at the east end of Princes Street is also located close to Waverley Railway Station; and
- Haymarket stop is located in front of the railway station and taxi rank at Haymarket.

Throughout the remainder of the route, the location of tram stops also provides integration and interconnection opportunities with bus services, as well as improving accessibility to public transport via the catchments served by each tram stop.

### 5.4.7 Impact on Taxi Services

Wherever possible the alignment will incorporate facilities for taxis. Where existing taxi stands would be directly impacted by the routing of the tram, alternative locations will be identified in consultation with CEC.

The proposed layout at Haymarket Station will incorporate all modes of transport. This will provide passengers with the benefits of bus/tram/rail interchange facilities. Similarly the proposed layout for Picardy Place will incorporate bus and tram stops and will be easily accessible to pedestrians.

### 5.4.8 Tram Workforce Traffic

It is estimated that about 184 staff will be required to operate Line One, made up of the following:

- Management, finance, and administrative staff: 14;
- Operational staff: 121, including:
  - 40 drivers;
  - 40 conductors; and
- Maintenance staff: 49.

The administrative offices for Line One are proposed to be located at the depot site in Leith and to include 50 parking spaces to accommodate workforce and visitor parking requirements.

Since drivers and conductors will work shifts, it is not expected that more than half of the 80 operational staff will arrive at the depot site at the start of the working day (prior to 06.00). Maintenance staff and management staff are expected to arrive over a period between 05.00 and 09.00, therefore it is unlikely that more than a total of 60 staff will arrive or leave during the same hourly
period. Even if all staff arrived at the site in private cars, with an occupancy rate of 1.3, no more than 50 vehicle movements are predicted on Constitution Street during the busiest hour. This number of movements represents approximately 10% of baseline traffic flows on Constitution Street and significant traffic or environmental impacts are not predicted.