

# Jacobs

## Trams to Granton, BioQuarter and Beyond Microsimulation Modelling Report

The City of Edinburgh Council

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## Trams to Granton, BioQuarter and Beyond Microsimulation Modelling Summary

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# 1. Introduction

## 1.1 Purpose of this Report

This report summarises the development of a series of microsimulation models to support design development for the Trams to Granton, BioQuarter and Beyond project.

Microsimulation modelling requires relatively detailed data on scheme layout and operation. This necessitates a series of design assumptions to be made that will later be developed fully at Outline Business Case stage. Microsimulation modelling helps identify potential operational issues emerging from early design assumptions, and the development of alternative mitigation strategies. The result is the identification of a realistic and workable scheme at a much earlier stage in the design process.

At this Strategic Business Case (SBC) stage, we are referring to all work to date as a Candidate Design, with one for each corridor. It is fully acknowledged that each will be subject to further refinement and, ultimately, to the relevant statutory procedures before they could be implemented. Similarly, as the design is refined at later stages, it should be expected that model outputs will change to reflect the refinements. Nevertheless, the results from this microsimulation modelling exercise give clear indication of the relative route performance and operational impacts.

Microsimulation has helped identify key network constraints and inform potential junction strategies, stop locations and wider placemaking opportunities. Models have also helped determine tram journey times on each section of the route. These have subsequently been incorporated into the strategic modelling for the project, informing forecast tram patronage, and supporting the wider Strategic Business Case.

## 1.2 Model Sections

Three models have been developed covering the full north-south tram route (excluding the existing city centre which is modelled separately as part of the original scheme):

- Orchard Brae - Granton to Princes Street via Waterfront Avenue, West Granton Access, Crewe Toll, Crewe Road South, Orchard Brae, Queensferry Road, Queensferry Street, connecting with the existing tram route at Princes Street
- Roseburn - Granton to Haymarket via Waterfront Avenue, West Granton Access, Crewe Toll, Roseburn Path, connecting with the existing tram route near Russell Road
- South East - South St Andrew Street Junction, North Bridge, South Bridge, Clerk Street, Minto Street, Craigmillar Park Lady Road (Cameron Toll) Old Dalkeith Road, Little France Drive (Royal, Infirmary, Edinburgh / BioQuarter)
  - **Beyond the BioQuarter, a connection to Shawfair railway station has been assumed in all transport modelling / passenger forecasting**, although an alternative route / future extension to Queen Margaret University via Craigmillar is also under consideration.
  - The rationale for a link to Shawfair is the connectivity to the Borders Railway that this provides. A tram connection provides important regional connectivity, linking the rail network to the Royal Infirmary, the BioQuarter, and south Edinburgh.

A map of the route sections is given in Figure 1.1. Tram alignments and stop locations will be subject to change as concept / candidate designs are refined through future stages of the project.

Figure 1.1: Trams to Granton, BioQuarter and Beyond Route Overview



The Orchard Brae tram route is largely on-street. A VISSIM model of this corridor was created in the first instance, and calibrated to 2023 turning count data. The northern section of the model has then been used to develop a Roseburn corridor model, which otherwise includes a fully off-street tram connection between Crewe Toll and Haymarket.

The South East model was originally developed to support public transport and active travel improvements on the A7 / A701 corridor. This model is therefore older and has been calibrated to 2016 turning count data. The model will be fully updated to new data at a future stage to support both tram and other shorter-term interventions.

### **1.3 Model Software and Time Periods**

All models have been developed to run using VISSIM 24. Model time periods are:

Orchard Brae and Roseburn

- AM 08:00-09:00 with a 30-minute warm-up period
- PM 17:00-18:00 with a 30-minute warm-up period

South East

- AM 08:00-09:00 with a 30-minute warm-up period

## 2. Orchard Brae

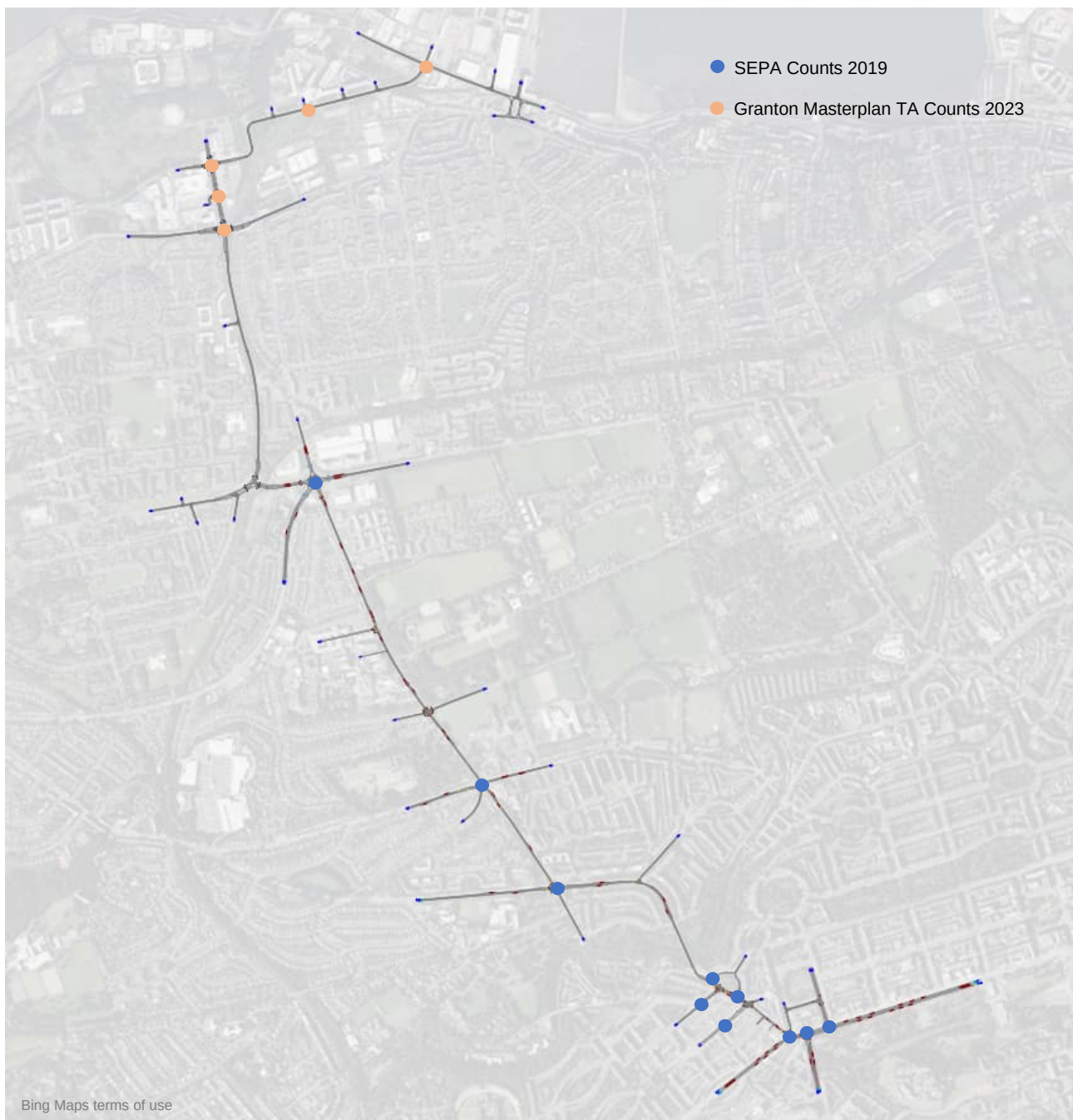
### 2.1 Base Network

The Orchard Brae base model network is shown in Figure 2.1 and extends from Granton to Princes Street via Waterfront Avenue, West Granton Access, Crewe Road South, Orchard Brae, Queensferry Road and Queensferry Street to Princes Street.

The network has been developed from digital mapping; signal staging and timings were provided by the City of Edinburgh Council.

Bus routes reflect autumn 2024 timetables, and include Lothian, Stagecoach, Citylink and Edinburgh Coach Line Services along the corridor.

**Figure 2.1: Base Model Network and Traffic Count Locations**





All speed limits are based on 2024 restrictions, with additional speed reductions reflecting junction geometry and specific network constraints.

Traffic count data has been obtained from two sources:

- 2019 SEPA counts – Princes Street to Crewe Toll
- 2023 Granton Masterplan Transport Assessment counts – West Granton Road / West Granton Access to Waterfront Avenue / West Harbour Road

Count locations are indicated in Figure 2.1 above.

## 2.2 Matrix Development and Model Calibration

Matrix development and model calibration followed a 5-step process.

### 1) Cordoning

Initial matrices were cordoned from the Council's Strategic VISUM model. Matrix factors were used to disaggregate output matrices into 15-minute periods. An indicative taxi matrix was also generated (assumed to be 5% of the original car matrix) in order to capture the impact of specific bus and taxi restrictions.

**Table 2.1: AM Matrix Disaggregation Factors**

| Time  | Car    | Taxi   | LGV    | HGV    |
|-------|--------|--------|--------|--------|
| 07:30 | 0.2247 | 0.0118 | 0.2365 | 0.2365 |
| 07:45 | 0.2247 | 0.0118 | 0.2365 | 0.2365 |
| 08:00 | 0.2404 | 0.0127 | 0.2530 | 0.2530 |
| 08:15 | 0.2374 | 0.0125 | 0.2499 | 0.2499 |
| 08:30 | 0.2366 | 0.0125 | 0.2491 | 0.2491 |
| 08:45 | 0.2356 | 0.0124 | 0.2480 | 0.2480 |
| Total | 0.95   | 0.05   | 1.00   | 1.00   |

**Table 2.2: PM Matrix Disaggregation Factors**

| Time  | Car    | Taxi   | LGV    | HGV    |
|-------|--------|--------|--------|--------|
| 07:30 | 0.2198 | 0.0116 | 0.2314 | 0.2314 |
| 07:45 | 0.2198 | 0.0116 | 0.2314 | 0.2314 |
| 08:00 | 0.2462 | 0.0130 | 0.2592 | 0.2592 |
| 08:15 | 0.2393 | 0.0126 | 0.2519 | 0.2519 |
| 08:30 | 0.2337 | 0.0123 | 0.2460 | 0.2460 |
| 08:45 | 0.2308 | 0.0121 | 0.2429 | 0.2429 |
| Total | 0.95   | 0.05   | 1.00   | 1.00   |

### 2) Initial assignment

An initial assignment was undertaken in VISSIM, with resulting paths exported to VISUM for matrix estimation below.

### 3) Matrix Estimation

Processed turning count data was imported into VISUM from an Excel based format. A matrix estimation process was undertaken to adjust each demand matrix to better reflect count data (Figure 2.2). Matrices were then exported for further assignment in VISSIM.



**Figure 2.2: Assigned VISUM Network for Matrix Estimation**



## 4) Post Matrix Estimation Base Model

Matrix estimated matrices were next assigned in VISSIM to review model performance and to ensure that models operated without unintended issues (e.g. vehicles blocking the network) and that levels of queuing reflected real-world network congestion.

Node evaluation results were exported for comparison with turning counts in Excel, as below.

## 5) Model Calibration

Modelled light vehicles (car, taxi + LGV) and total traffic flows have been calibrated against the observed count data based on WebTAG Percentage Difference and GEH criteria.

Percentage difference and GEH criteria are defined in Table 2.3.

**Table 2.3: AM Matrix Disaggregation Factors**

| Criteria | Description                                                                 | Guideline      |
|----------|-----------------------------------------------------------------------------|----------------|
| 1        | Individual flows within 100 veh/h of counts for flows less than 700 veh/h   | > 85% of cases |
|          | Individual flows within 15% of counts for flows from 700 to 2,700 veh/h     | > 85% of cases |
|          | Individual flows within 400 veh/h of counts for flows more than 2,700 veh/h | > 85% of cases |
| 2        | GEH < 5 for individual flows                                                | > 85% of cases |

A high level of model calibration has been achieved, as shown in Table 2.4. In both morning and evening peaks, comparing observed and modelled flows, 133 out of 134 locations pass the percentage difference criteria.

A full summary of calibration results by junction is given in Appendix A.

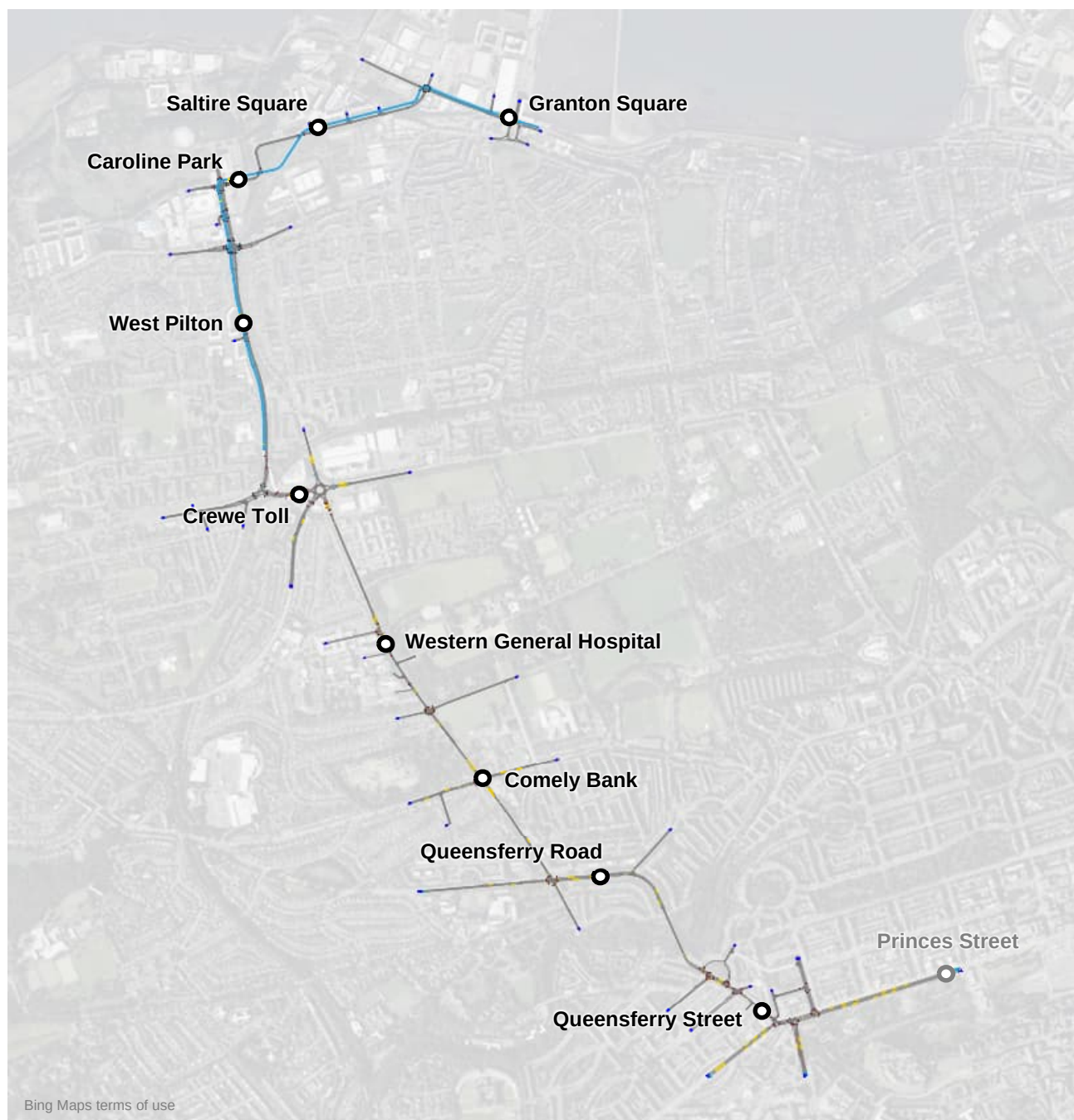
**Table 2.4: Model Calibration Results**

|                   | % Difference   |       |                |       | GEH            |       |                |       |
|-------------------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|
|                   | AM 08:00-09:00 |       | PM 17:00-18:00 |       | AM 08:00-09:00 |       | PM 17:00-18:00 |       |
|                   | Lights         | Total | Lights         | Total | Lights         | Total | Lights         | Total |
| No of counts pass | 133            | 133   | 133            | 133   | 133            | 133   | 130            | 130   |
| Total counts      | 134            | 134   | 134            | 134   | 134            | 134   | 134            | 134   |
| % Pass            | 99%            | 99%   | 99%            | 99%   | 99%            | 99%   | 97%            | 97%   |

## 2.3 Tram Design and Assumptions

The Do-Something (With-Tram) network is shown in Figure 2.3.

**Figure 2.3: Orchard Brae With-Tram Network**



Bing Maps terms of use

Starting from the city centre, the tram route diverges from the existing line at Shandwick Place, west of Princes Street and Lothian Road. Travelling northwards, proposed tram stops are located at:

- Queensferry Street
- Queensferry Road
- Comely Bank
- Western General Hospital
- Crewe Toll
- West Pilton
- Caroline Park
- Saltire Square
- Granton Square

Geometric constraints mean that only an east facing junction can be delivered between Queensferry Street and Princes Street. No direct connection would be possible between Queensferry Street and Shadwick Place.

Travelling from the Granton corridor to the West End, Haymarket and all stops beyond to the airport would require interchange at Princes Street. Operations are complicated by trying to merge two tram routes at the busy Princes Street / Lothian Road / South Charlotte Street junction. It has not been possible to develop a robust signal strategy for tram that does not significantly impact on wider traffic movements, including bus.

The proposed tram stop at Queensferry Street requires the relocation of busy bus stops to other locations. Given the longer dwell times of regional and express services, the modelled proposals are likely to create a major real-world operating constraint, increasing bus journey times, general traffic congestion, directly impacting on tram reliability.

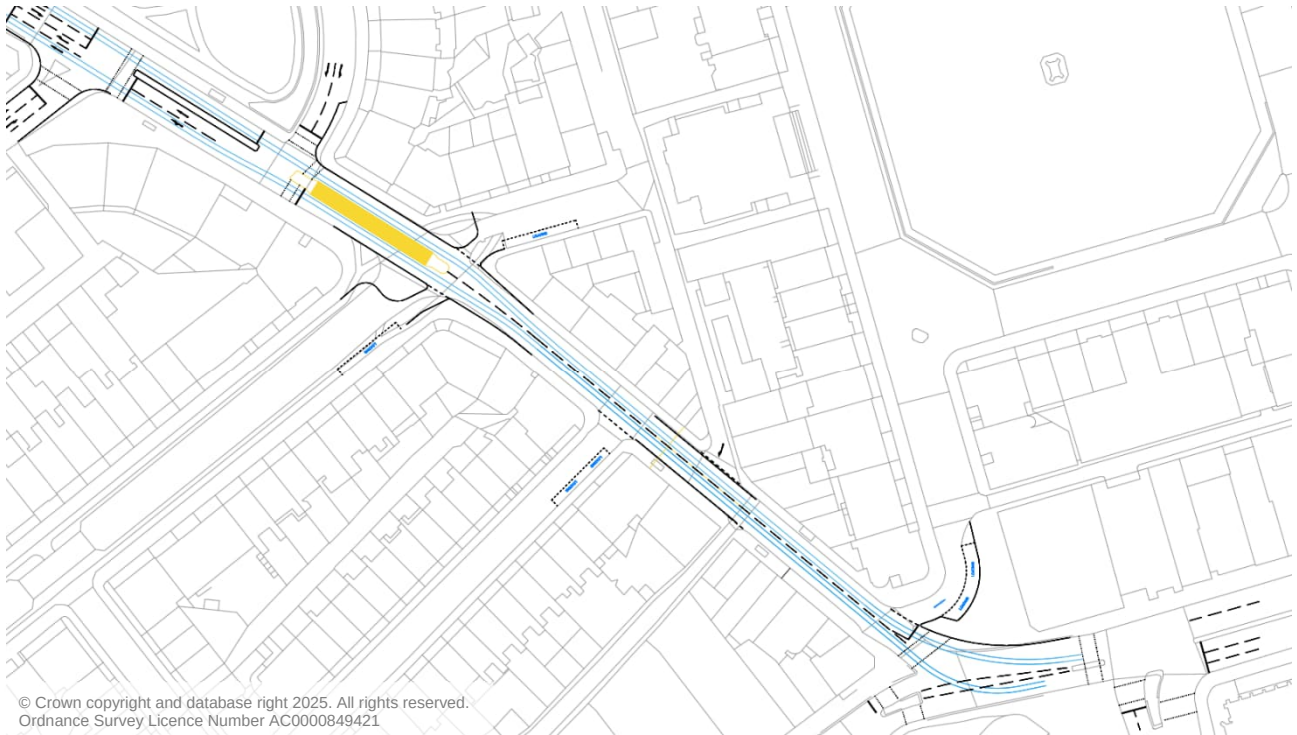
Limited bus stop capacity will restrict future bus passenger growth on the corridor. Stagecoach services from Fife continue to increase, and Lothian and Lothian Country services are expected to expand as a result of development across the Waterfront and around Queensferry. Alternative stop locations have been considered including Charlotte Square and Melville Street, but these are considered unacceptable due to streetscape and heritage impacts. Options to maintain adequate bus stop capacity on the Queensferry Road corridor and into the city centre will need to be considered in detail as part of an Outline Business Case should the Orchard Brae route be taken forward.

An indicative tram stop is shown on Queensferry Street in Figure 2.4; the exact position of this will need to be developed as part of a detailed design, as there are multiple trade-offs in finalising a preferred location.

Trams would then continue via Drumsheugh Place / Lynedoch Place and Dean Bridge towards Queensferry Road / Orchard Brae. Width constraints mean that no segregated active travel provision could be provided across Dean Bridge.



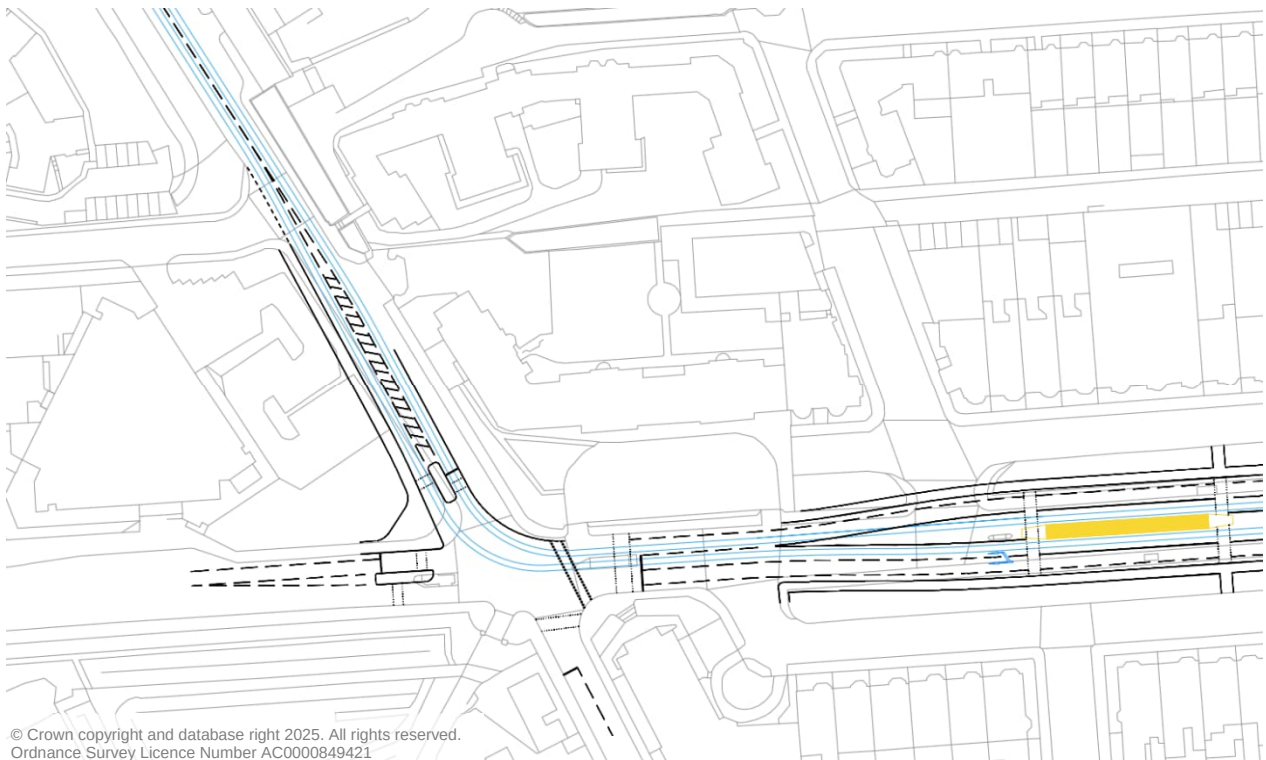
**Figure 2.4: Queensferry Street**



A tram stop is proposed on Queensferry Road at South Learmonth Avenue.

The junction of Orchard Brae and Queensferry Road will require careful design to accommodate trams (Figure 2.5). Typically, tram articulation can negotiate tight turns or steep gradients, but not both at the same time. Future design development may need to consider the reprofiling of the southern section of Orchard Brae to accommodate chosen tram vehicle performance.

**Figure 2.5: Queensferry Road / Orchard Brae**



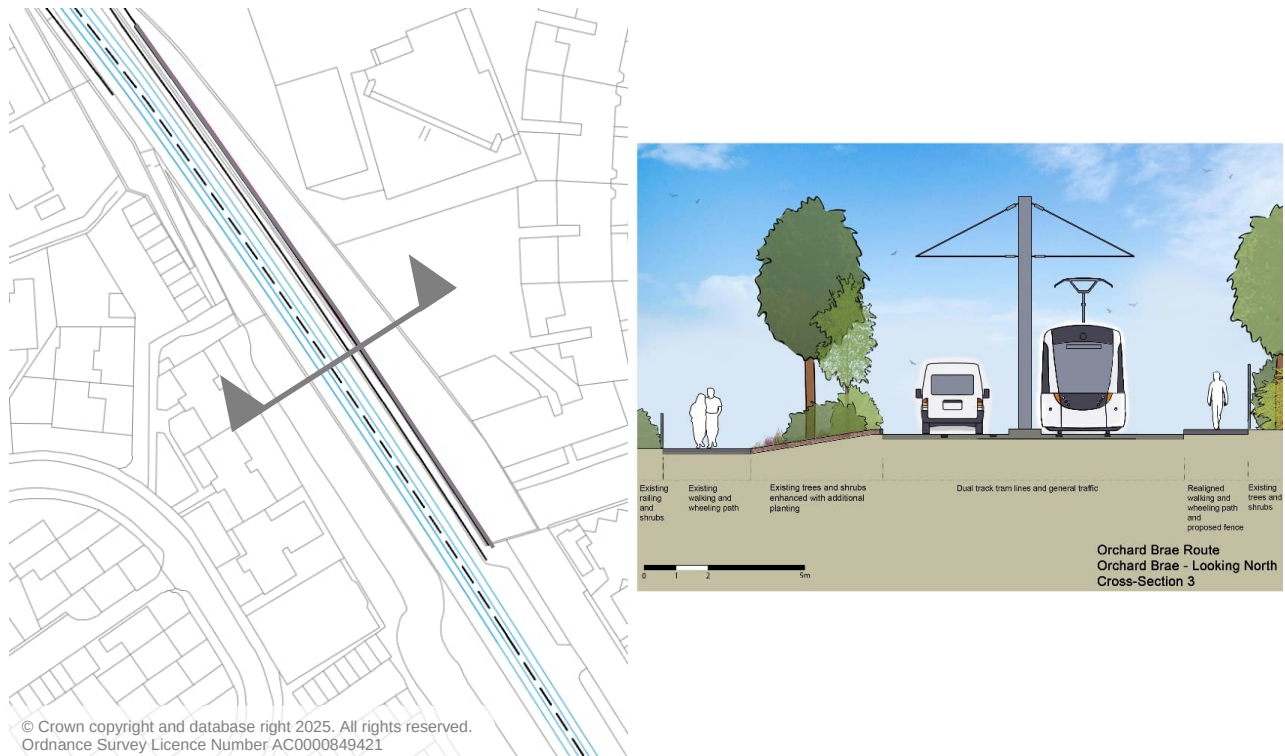


## Trams to Granton, BioQuarter and Beyond Microsimulation Modelling Summary

Orchard Brae was originally built for trams, with a constant 6% gradient. Due to the narrow cross-section and aforementioned gradient, no stop is proposed on this section. Instead, the next halt is on Queensferry Road, west of Learmonth Terrace.

An indicative tram cross-section is given in Figure 2.6.

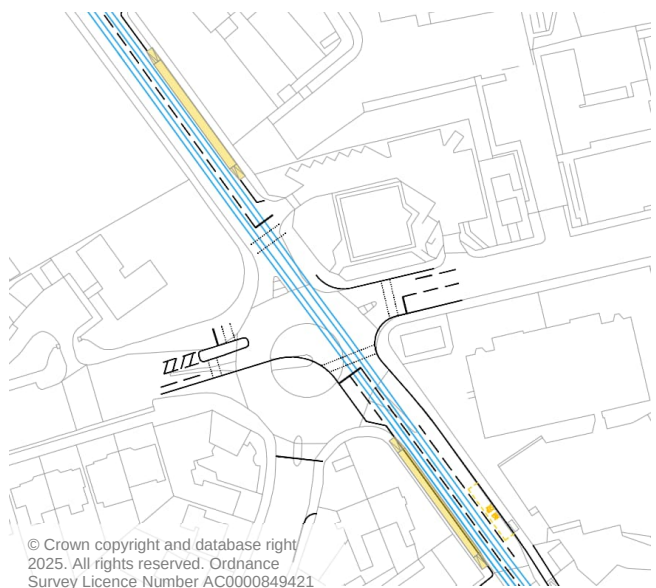
**Figure 2.6 Cross-Section at Orchard Brae Looking North**



Comely Bank Roundabout would be signalised, as illustrated in Figure 2.7. To minimise the number of traffic stages, (necessary to improve overall junction performance), Orchard Road would require to be stopped-up, with traffic diverted via Orchard Place or Orchard Drive. Tram platforms would be staggered either side of the junction (northbound to the south on Orchard Brae, southbound to the north on Crewe Road South) to minimise delay.

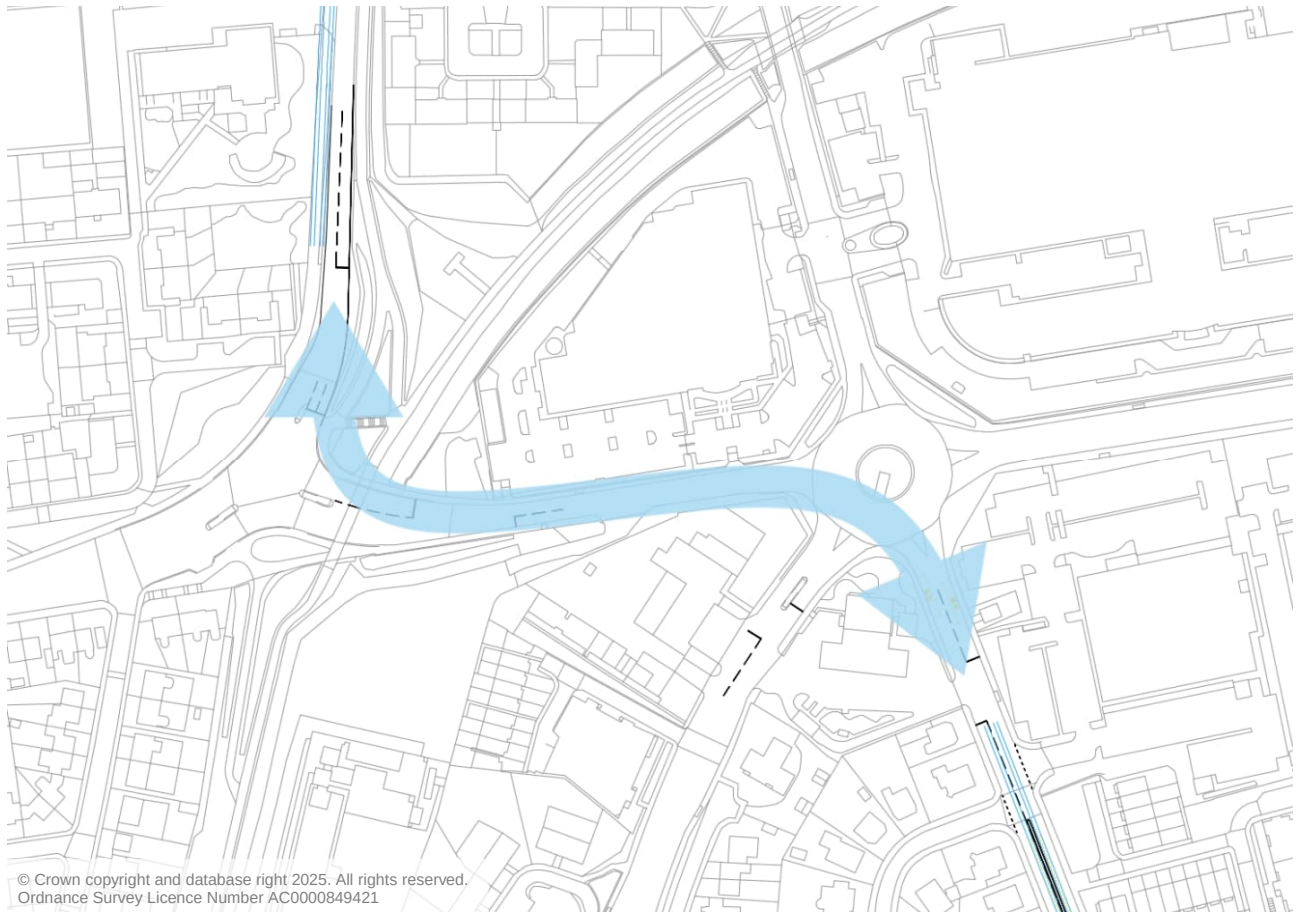
An overarching assumption within the design of the on-street section of the route is that uncontrolled right turn movements across the tram tracks should be minimised. All major junctions are therefore signalised. On Crewe Road South, a number of properties on the west side of the street have private driveways. How access is maintained to these will require careful consideration. A central median will be required to accommodate Overhead Line Equipment (OLE), potentially restricting access to adjacent properties to left in / left out. U-turning movements would be accommodated at Crewe Toll but the signalisation of Comely Bank Roundabout (right) makes U-turning at this location impossible. Alternatively, driveway access would remain uncontrolled, accepting the degree of risk that this solution creates.

**Figure 2.7: Crewe Toll Roundabout Signalisation**



North of Crewe Road South, the tram would continue to Crewe Toll, crossing Ferry Road, to join the West Granton Access. Microsimulation modelling has assumed that the tram alignment would avoid Crewe Toll roundabout. Nevertheless, a preferred alignment at this location has still to be determined. There are trade-offs between traffic impacts, land take and the aspiration to provide a tram stop with effective bus interchange, and walking, wheeling and cycling connectivity.

**Figure 2.8: Crewe Toll / Crewe Road South**



Coding of the northern section of the tram route between Ferry Road and Granton is based on the 2008 detailed design, being developed for construction at that time. Tram is largely off-street, running parallel to West Granton Access and Waterfront Avenue, with a terminus at Granton Square.

## 2.4 Network Performance

An illustration of network performance is given in Figures 2.9. to 2.12 below.

The Princes Street / Lothian Road and Shadwick Place / Queensferry Street junctions are two of the busiest in the city centre. Under the existing arrangement, general traffic runs north / south between Lothian Road and South Charlotte Street, with buses and trams primarily operating east / west. Being bus only, the adjacent Queensferry Street can be readily accommodated within the traffic signal staging. But coordinating new Granton to Princes Street (and reverse) tram movements is extremely challenging, particularly given the slow tram turning speeds (10kph) through the junction.

Figure 2.9: Queensferry Road to Princes Street





Figure 2.10: Crewe Road South and Orchard Brae



Figure 2.11: Crewe Toll to Queensferry Road

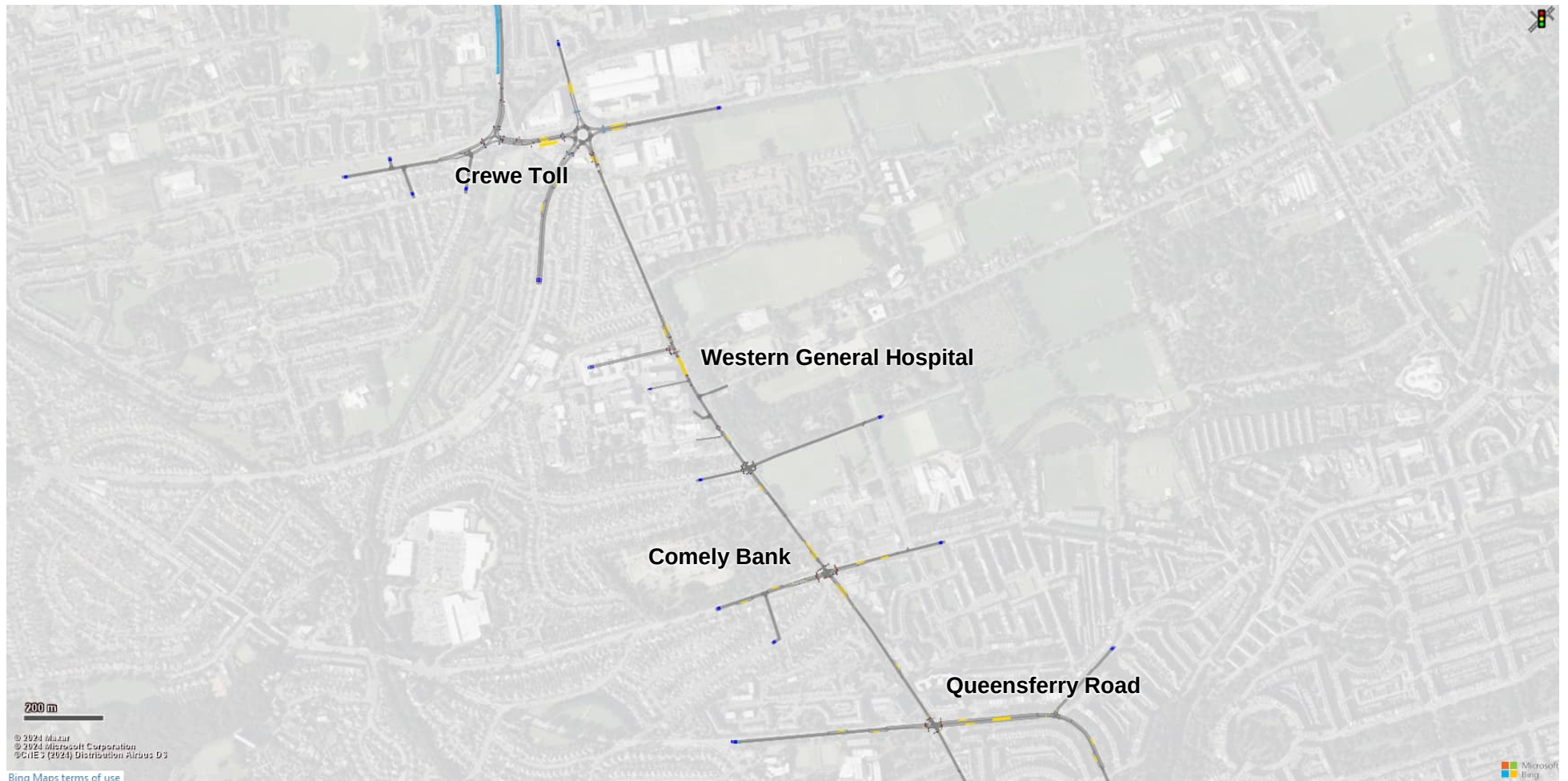


Figure 2.12: Granton to Crewe Toll





There are multiple complex junctions between South Charlotte Street and Dean Bridge. These are:

- Lynedoch Place / Randolph Crescent
- Lynedoch Place / Drumsheugh Gardens
- Drumsheugh Place / Randolph Crescent
- Queensferry Street / Melville Street
- Queensferry Street / Shandwick Place / Hope Street
- Shandwick Place / Lothian Road / Princes Street
- Princes Street / South Charlotte Street

It has not been possible to coordinate traffic signal timings to provide a green wave for tram through this section of the network. In the interpeak, delays can be minimised but, in the peak, the lane allocations and signal strategies required to accommodate tram result in significant queues citybound from Queensferry Road. These are shown in Figure 2.9 above and extend westwards to Learmonth Terrace.

A signal strategy has been developed for Queensferry Road / Orchard Brae that largely minimises queues and delays.

Figures 2.10 and 2.11 illustrate peak evening queues; traffic signals at Comely Bank, necessary to minimise the delay to trams on the north / south corridor, result in some queuing on Craighleith Road and Comely Bank.

Crewe Road South is single lane in each direction, but it has been possible to locate bus stops in laybys, limiting the impact of bus dwell times on tram journey times. Nevertheless, the restricted geometry requires that trams stop in the traffic lane to board and alight, delaying all traffic behind including buses. The impact of this arrangement on tram is somewhat mitigated by the fact that having waited at a stop for 25 seconds, the path is now clear in front, and so free flow journey times benefit. Nevertheless, overall reliability is impacted by the arrangement with a significant variation in journey times between peak and interpeak periods.

Tram would cross Ferry Road to the west of Crewe Toll roundabout. A simple two stage crossing (co-ordinated with pedestrians) minimises traffic impacts at this junction.

Between Granton and Ferry Road, the tram route is primarily off-street with simple two stage crossings across roads and accesses (Figure 2.12). The limited interaction with general traffic results in minimal network congestion and reliable tram journey times over this section.

## 2.5 Corridor Tram Journey Times

Based on the network performance above, resulting tram journey times are summarised in Table 2.5. The VISUM strategic model for Edinburgh tram focuses on AM peak and interpeak modelled periods. Therefore, only these time periods are discussed for the microsimulation analysis. Based on a review of observed count data, interpeak microsimulation models have been developed assuming 70% of peak period demand.

**Table 2.5: Tram Journey Times – Granton to Princes Street**

|                           | AM Peak |         | Interpeak |         |
|---------------------------|---------|---------|-----------|---------|
|                           | Average | Maximum | Average   | Maximum |
| Granton to Princes Street | 34 mins | 37 mins | 27 mins   | 28 mins |
| Princes Street to Granton | 31 mins | 33 mins | 27 mins   | 30 mins |

In the peak, the average tram journey time from Granton to the Princes Street stop is 34 minutes, in the reverse direction the journey time is just under 32 minutes. In the interpeak, when congestion is reduced, the journey time is approximately 27 minutes in both directions. Network congestion therefore increases peak journey times by around 5-7 minutes or by 19-26% over free-flow conditions.

## 3. Roseburn

### 3.1 Base Network

The Roseburn Base VISSIM model network has been developed from the Orchard Brae model – the section between Granton and Crewe Toll is shared between both and trip matrices have been adjusted to reflect the amended northern section of network.

The Haymarket section of the model has been taken from a city centre VISSIM model, previously used to optimise signal timings on the existing on-street section of the route.

In between, new sections of road network have been coded at Ravelston Dykes and Queensferry Road but, since tram runs off-street along the Roseburn Path, there is no interaction with traffic at these locations.

### 3.2 Tram Design and Assumptions

The Do-Something (With-Tram) network is shown in Figure 3.1. The tram route diverges from the existing line at Roseburn, to the west of Haymarket. It then runs via the Roseburn Path, West Granton Access and Waterfront Avenue to Granton Square.

Proposed tram stops are located at:

- Roseburn
- Craigleith
- Telford Drive (for Western General Hospital)
- Crewe Toll
- West Pilton
- Caroline Park
- Saltire Square
- Granton Square

In addition to the above, the Roseburn alignment will serve Haymarket and West End stops prior to Princes Street. As a result, this route provides improved interchange with stops towards the airport – interchange is at Haymarket rather than Princes Street, reducing total journey times. The Roseburn corridor also better serves major office locations in the Haymarket / West End area.

A Delta Junction layout will be provided at the Roseburn junction with the existing route. This will enable trams to operate directly between the depot and Granton, increasing the flexibility of out-of-service movements. A direct passenger service between Granton and the airport is therefore possible.

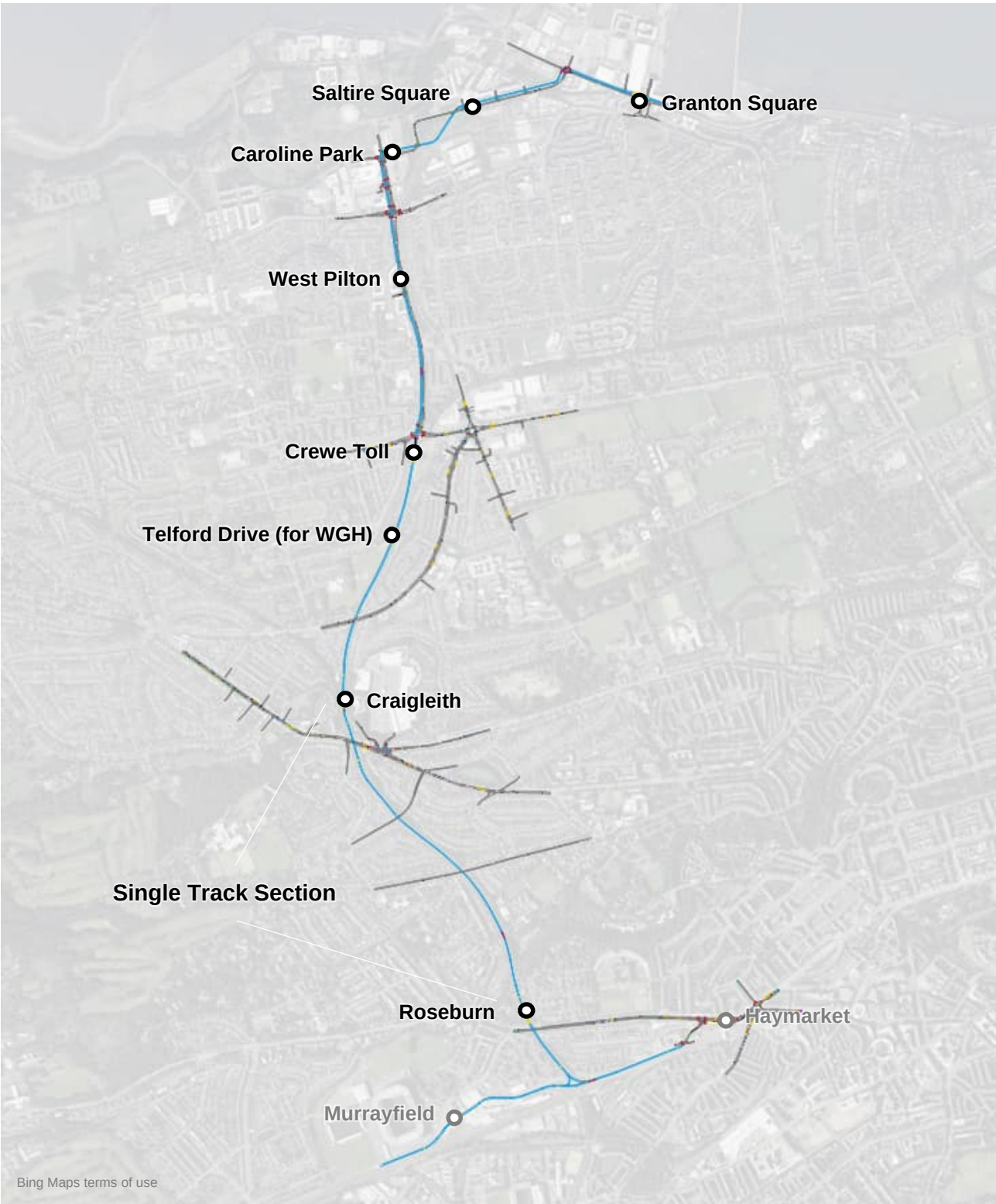
Along the Roseburn Path, the corridor would be double tracked from Roseburn junction to Roseburn tram stop. From there to Craigleith, the line would be single tracked to minimise land take and the impact of the scheme on landscape and ecology. A previously proposed stop at Ravelston Dykes is also omitted for this reason.

Figure 3.2 illustrates three cross-sections between Coltbridge Viaduct and Ravelston Dykes, showing how a single tram and track and active travel provision can be accommodated within the existing track formation.

As per the 2008 design, two tracks are proposed between Craigleith and Ferry Road. The tram route then crosses Ferry Road to join the West Granton Access.

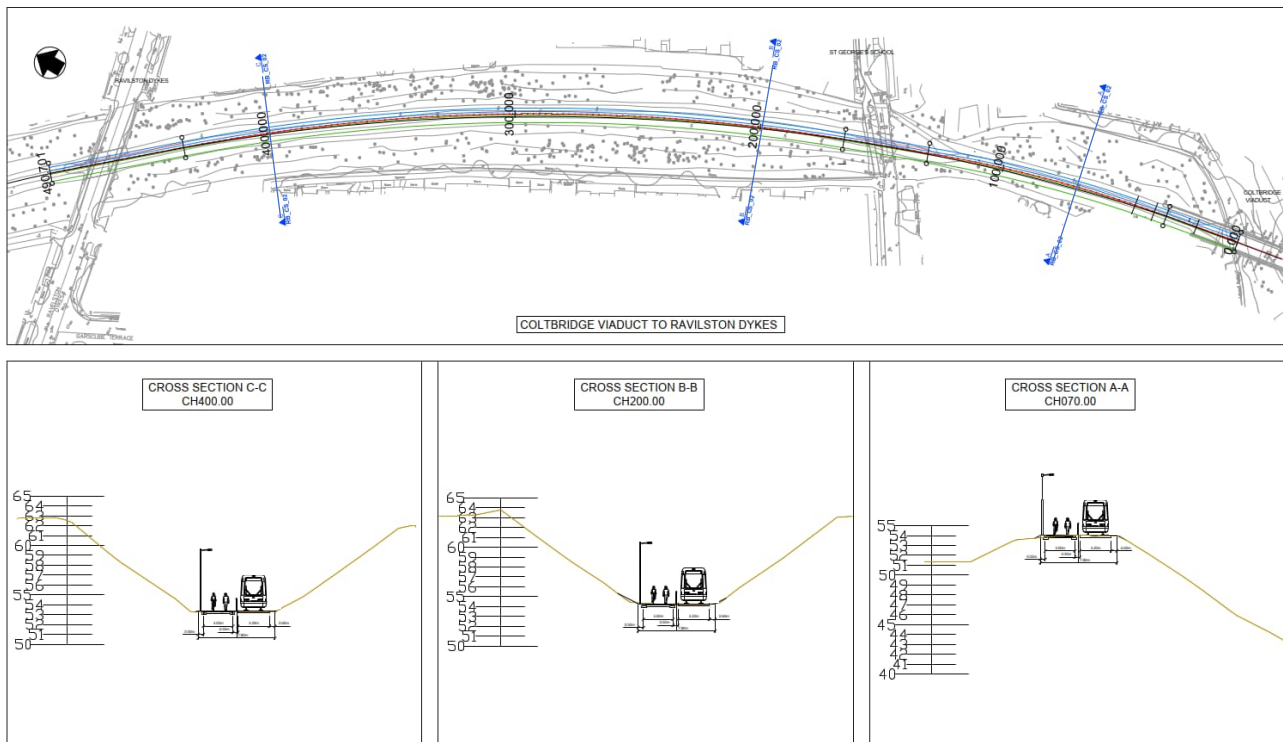
Coding of the northern section of the tram route between Granton and Ferry Road, is taken from the Orchard Brae model, which in turn is based on the 2008 detailed design. Tram is largely off-street, running parallel to West Granton Access and Waterfront Avenue.

Figure 3.1: Roseburn With-Tram Network

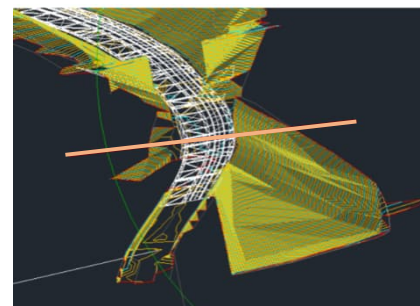
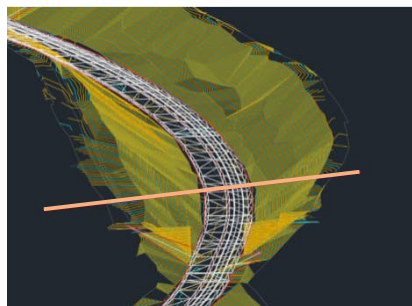
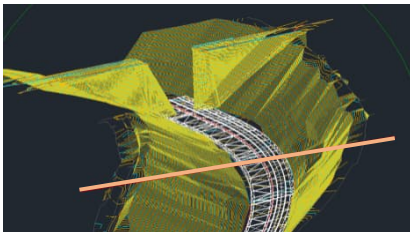




**Figure 3.2: Coltbridge Viaduct to Ravelston Dykes, Cross-Section of Tram and Active Travel Path Looking North**



### 3D Cross Sections



## 3.3 Network Performance

Being almost fully off-street, there is limited interaction with general traffic, resulting in more reliable journey times compared with the Orchard Brae route.

The single line section of track between Roseburn and Craigleith is a source of potential delay. The length of single tracking is approximately 1.5km. Assuming an average speed of 40kph (allowing for acceleration and deceleration at each end), the time to traverse the section would be 2:15 minutes. Hence the **maximum** delay encountered by a tram would be approximately 2 minutes 30 seconds (150 seconds).

Within the city centre, traffic signals operate on a 112.5 second cycle, the above delay is only slightly longer than a tram missing its path through a junction in the city centre.

A single-track section also helps regulate southbound trams on approach to the existing line. In this direction, there is an opportunity to coordinate trams through the new Roseburn junction reducing the total delay.

Ferry Road is the busiest road crossing, but modelling indicates that delays are minor – typically less than 30 seconds.

### 3.4 Corridor Tram Journey Times

Tram journey times from Granton to Princes Street are summarised in Table 3.1. Interpeak journey times have been based on 70% of peak period demand. These times include an extra 6.5 minutes between Haymarket and Princes Street tram stops (this section is not directly modelled).

**Table 3.1: Tram Journey Times – Granton to Princes Street**

|                           | AM Peak |         | Interpeak |         |
|---------------------------|---------|---------|-----------|---------|
|                           | Average | Maximum | Average   | Maximum |
| Granton to Princes Street | 26 mins | 27 mins | 25 mins   | 27 mins |
| Princes Street to Granton | 25 mins | 26 mins | 25 mins   | 26 mins |

Peak and interpeak journey times are similar, reflecting the improved reliability that an off-street route provides.

In the morning and evening peak, the average tram journey time from Granton to the Princes Street stop is 26 minutes, in the reverse direction the time is approximately 25 minutes. Interpeak journey times are also around 25 minutes in both directions.

## 4. South East

### 4.1 Base Network

The south east Base microsimulation model covers the section of tram route between Princes Street and Little France Drive, as shown in Figure 4.1. The model was originally built for another study and extended only as far as Cameron Toll. For this study, the model has been expanded to include the Old Dalkeith Road to Little France Drive. No new count data has been collected on the extended section to due major road works in the vicinity of Cameron Toll at the time of model development.

**Figure 4.1: South East Base Model**



### 4.2 Model Traffic Demands and Calibration

The model is calibrated to 2016 SEPA count data. Although increasingly dated, an analysis of more recent count information highlights that there has been no significant growth on the corridor and that traffic levels have in fact reduced slightly at certain locations.

Model calibration results for the South East model are given in Table 4.1, with a more detailed summary of results by junction is given in Appendix B.

**Table 4.1: Model Calibration Results, AM 08:00-09:00**

|                   | % Difference |       | GEH <5 |       | GEH <7.5 |       |
|-------------------|--------------|-------|--------|-------|----------|-------|
|                   | Lights       | Total | Lights | Total | Lights   | Total |
| No of counts pass | 265          | 263   | 213    | 209   | 262      | 260   |
| Total counts      | 296          | 296   | 296    | 296   | 296      | 296   |
| % Pass            | 90%          | 89%   | 72%    | 71%   | 89%      | 88%   |

Although less than 85% of counts have a GEH of 5 or less (a good match), several are slightly over 5. When the threshold is increased to a GEH of 7.5 (an acceptable match) over 85% of counts pass. At this stage the model is being used to identify high level junction strategies and resulting tram journey times, and the level of accuracy provided is considered appropriate for this use.

An updated VISSIM model can be developed as part of a future workstream to support an Outline Business Case for the Trams to Granton, BioQuarter and Beyond project.



#### 4.3 Tram Design and Assumptions

A Candidate Design has been developed for significant sections of the south east tram corridor and the VISSIM modelling reflects the key assumptions within this.

The With-Tram model has been extended from Little France Drive to Shawfair via The Wisp and Millerhill to help estimate tram journey times for the full route.

As with Orchard Brae, an overarching assumption of the design is that uncontrolled right turn movements across the tram tracks should be avoided. All major junctions are therefore signalised, similar to the existing on street design.

Between the city centre and Cameron Toll roundabout, traffic signal junctions are assumed to operate on a 112.5 second cycle time, providing 32 tram paths per hour in each direction. Again, this design philosophy is consistent with the existing on-street section of tram corridor between Haymarket and the Foot of the Walk.

Figure 4.2: Illustrates the route corridor and proposed stop locations. Stops are:

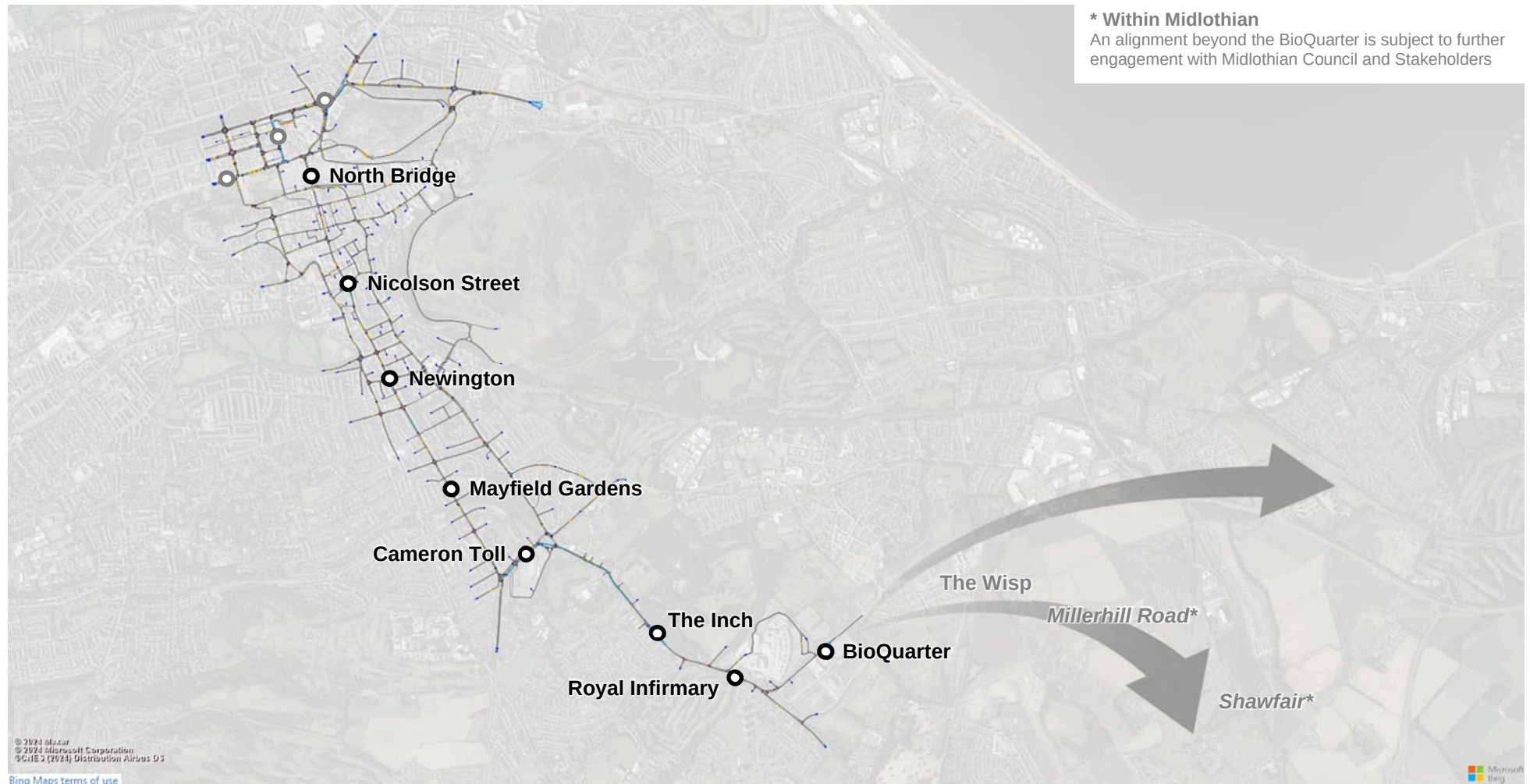
- North Bridge
- Nicolson Street
- Newington
- Mayfield Gardens
- Cameron Toll
- The Inch
- Royal Infirmary
- BioQuarter
- The Wisp
- *Millerhill Road - Midlothian*
- *Shawfair Station - Midlothian*

A Delta Junction would be created at Princes Street / South St Andrew Street, providing an all-movements connection to the existing network. The tight radii mean that turning tram speeds will be limited to a maximum of 10kph. Multiple conflicting tram movements and the need to provide sufficient pedestrian and general traffic green time means that this junction is a potential constraint on tram capacity.

A tight radius curve is also required turning the corner from Princes Street to North Bridge. Tracks require to be slewed northwards (towards the Apple Store) reducing the footway width at this location.

The above geometric requirements mean that it is not possible to introduce segregated cycling on the north side of east Princes Street. Instead, it might be possible to accommodate cycling on the south side of Princes Street, although this would impede access to Waverley Steps and the Balmoral Hotel.

Figure 4.2: South East With-Tram Network



In accordance with the Council's Circulation Plan, it has been assumed that between North Bridge and Cameron Toll the corridor will not be a primary cycle route. Instead, the corridor will be prioritised for public transport, including both bus and tram. To support this, and in accordance with the plan, a modal filter is proposed in the vicinity of North Bridge, restricting access to only buses, trams and taxis. In doing so, the section of South Bridge, north of Chambers Street, would be open for deliveries and local access only, with an exit via Blair Street.

A tram stop would be provided on North Bridge, as shown in Figure 4.3. Tram stop platforms would be offset to minimise the cross-section, maximising footway space. It is assumed that direct lift access would be provided between the tram stop and Waverley Station, delivering a high-quality interchange. This feature was a key element of City Centre Transformation. It would improve access between the station and the Old Town, which is currently difficult, especially for passengers with reduced mobility or with luggage.

There is a desire to deliver segregated cycling over North Bridge. Nevertheless, provision can only be confirmed as part of the development of a detailed design, at a future stage. Specific tram geometric constraints and stop requirements may require additional width, making it impossible to deliver segregated cycle lanes within the constrained width of the bridge. Providing suitable segregated cycling crossing facilities at the Princes Street / North Bridge junction will also be challenging.

**Figure 4.3: North Bridge Trams Stops**

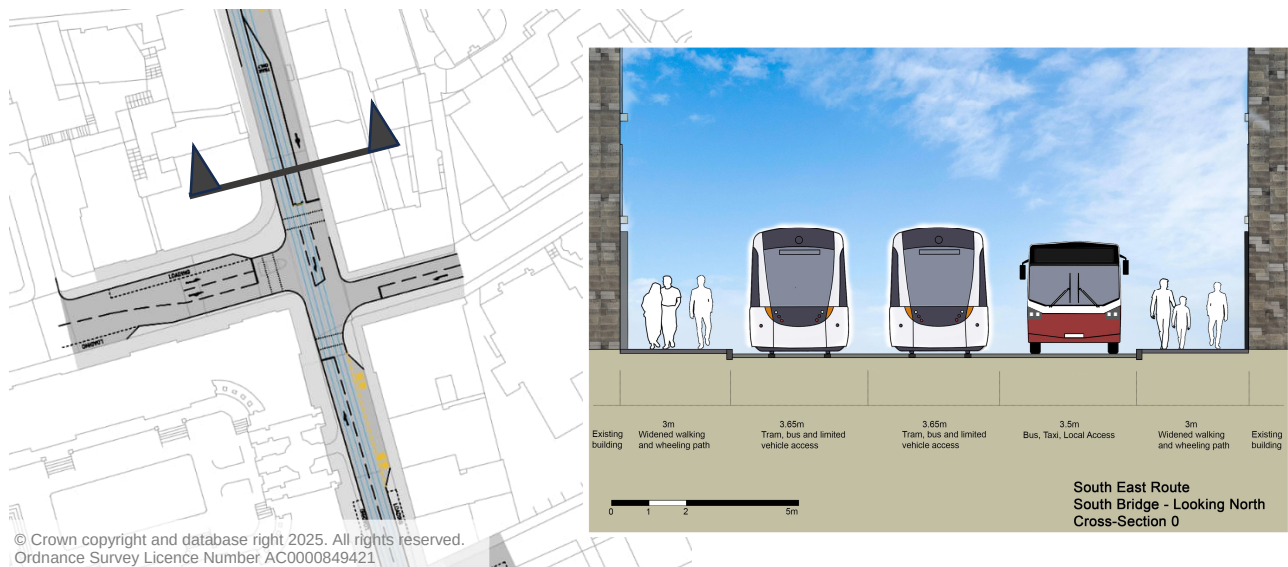




On the South Bridge section, the design seeks to improve pedestrian provision, with widened footways. This is achieved by reducing the number of traffic lanes from four to three (or two where bus stops and loading is provided). Doing so helps address a specific issue at bus stops, where it is almost impossible for pedestrians to pass waiting passengers without stepping into the roadway.

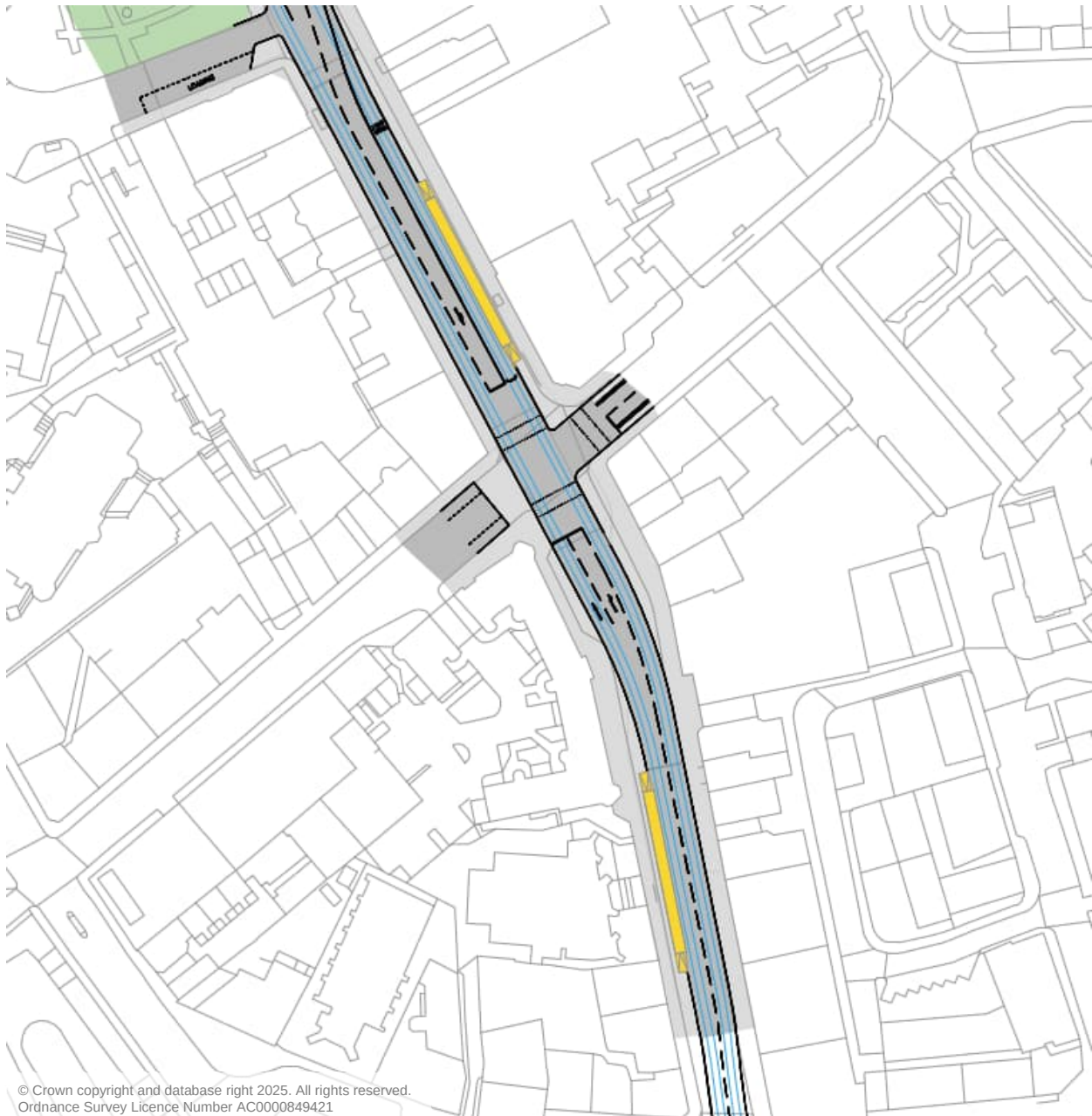
Figure 4.4 illustrates an example cross-section on South Bridge, north of Chambers Street. Three metre footways are provided, with two shared traffic / tram lanes and a southbound bus stop on the east side.

**Figure 4.4: Cross-Section at South Bridge Looking North**



The gap between a tram-stop platform and the nearside track rail is too narrow to allow a cyclist to safely pass. To avoid the need for cyclists to cross the rail, tram stops at Nicholson Street and Newington Road have been designed to allow cyclists to pass behind the platform. Platforms are offset to provide sufficient space; the Nicholson Square layout is shown in Figure 4.5.

**Figure 4.5: Example Tram Stop Layout, Nicolson Street**



Between Minto Street / Salisbury Place and Cragmillar Park / Lady Road, a single shared traffic and tram lane would be provided in each direction, together with right turn filter lanes as required. All buses and loading would be in bays, minimising potential delays to tram.

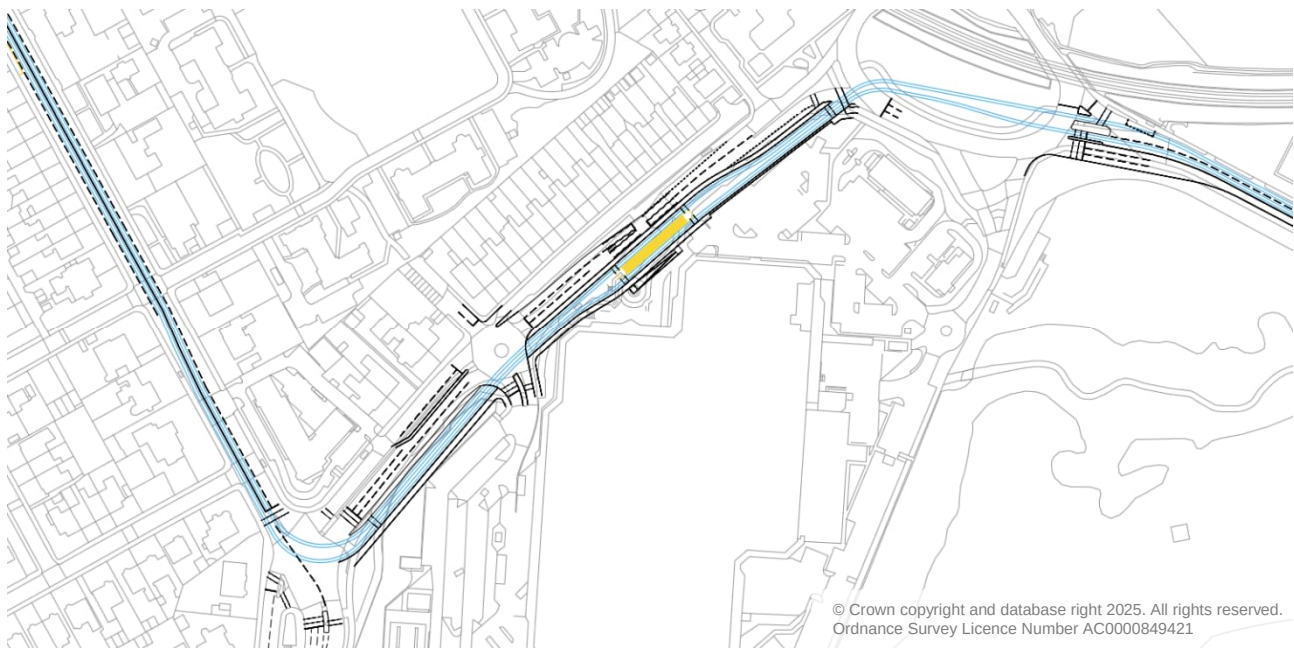
The majority of properties on this section of the route have private driveways. An overarching assumption within the design of the on-street section of the route is that uncontrolled right turn movements across tram tracks are minimised where possible. In addition, a central median will be required to accommodate OLE, potentially necessitating left in / left out access. Providing safe access to each property will therefore require careful consideration, including the use of alternative routes and possible U-turn provision at key junctions.

Liberton Road / Craigmillar Park / Lady Road, Cameron Toll Car Park Access and Cameron Toll are a complex series of junctions, as highlighted in Figure 4.6.

The tight turn between Craigmillar Park and Lady Road means that trams will traverse the junction slowly (10kph), reducing the available capacity for buses and general traffic. To deliver even 70% of current traffic capacity, a complicated junction layout is required with multiple traffic lanes. On Lady Road, east of Craigmillar Park, two tram tracks and five general traffic lanes are necessary, limiting opportunities for placemaking and streetscape improvements. It may be possible to reduce the number of lanes required, but modelling indicates that this will result in unacceptable levels of congestion.

A route adjacent to the Cameron Toll shopping centre was previously agreed with the site owner. Due to the subsequent construction of a fast-food restaurant, the route has been amended to pass through the centre of Cameron Toll roundabout rather than to the south. Otherwise, delivery of tram through this junction is simpler than at Liberton Road / Craigmillar Park / Lady Road.

**Figure 4.6: Lady Road at Cameron Toll**



Beyond Cameron Toll, the route is largely on-street along Old Dalkeith Road, mitigating potential impacts at Bridgend Farm, and wider tree loss along the route. The Candidate Design takes cognisance of active travel proposals along the corridor. However, it has been agreed that the materials used in that scheme should reflect the fact it will likely be more cost effective to rebuild cycle provision as part of the construction of tram at a point in the future.

Little France Drive includes a segregated corridor for tram. The route then turns right to run adjacent to Tobias Street and then right again to follow the A6106 and Harelaw to Shawfair. These sections are also assumed to be largely off-street although the detail of this section of the alignment will be agreed with Midlothian Council at a future stage.



#### 4.4 Network Performance

Microsimulation model runs have been assigned with 70% of baseline traffic, consistent with earlier City Centre Transformation assumptions. The deduction reflects:

- the reduced capacity of the road network
- mode switch from car to public transport, and
- the Council's target to reduce vehicle kilometres

Figures 4.7 to 4.12 illustrate modelled traffic volumes and queuing at 08:30. The junction that results in greatest congestion is Liberton Road / Craigmillar Park / Lady Road. This acts as a constraint to northbound movements towards the city centre from the south.

Figure 4.7 shows the benefit of a modal filter at North Bridge, with no significant delays to tram and buses as a result. Note that the proposed Bank Street modal filter (to be implemented as part of Meadows to George Street) has been omitted, reflecting the fact the model excludes Lothian Road and the potential for the westbound displacement of traffic.

Eastbound displacement is illustrated in Figure 4.8 with increased traffic on St Leonard's Street and Bernard Terrace towards South Clerk Street and Melville Drive.

Tram journey time reliability on the A701 Newington Road / Minto Street / Mayfield Gardens / Craigmillar Park corridor are sensitive to the performance of the parallel Dalkeith Road corridor. Localised queuing on the A701 (Figure 4.9) impacts on tram reliability, particularly at East / West Mayfield and Salisbury Road / Place junctions.

Figure 4.10 illustrates Cameron Toll / Lady Road corridor, including the Liberton Road / Craigmillar Park / Lady Road junction. Even at 70% of Do-Minimum demand, significant queuing occurs at this junction. With higher traffic levels, queues quickly extend in all directions. To minimise the impact on tram journey times, it becomes necessary to prioritise Craigmillar Park and Lady Road, further impacting Liberton Road and Esslemont Road queues.

The closure of Esslemont Road has been considered. This would simplify the number of junction stages, improving overall performance. It would also support improved walking, wheeling and cycling connectivity between the tram corridor and King's Buildings. Nevertheless, Esslemont Road is a bus route, and the closure would add significant cost and delay to Service 38. Implementing a modal filter to enable bus provision is of no benefit as traffic signals would still need to incorporate an Esslemont Road stage.

Tram runs through the centre of Cameron Toll roundabout and so can largely operate with traffic, limiting any impact. But there is a complex interaction between all three junctions Craigmillar Park / Cameron Toll Shopping Centre Access / Cameron Toll which requires careful coordination to minimise delays to tram, bus and general traffic. Taken together, these are the limiting factor in being able to run the VISSIM model with higher levels of traffic demand.

Tram is on-street on Old Dalkeith Road. At 70% of Do-Minimum demand, the corridor operates satisfactorily. Above 85% of existing demand, it becomes necessary to limit general traffic capacity at peak times. The most likely location for this is at the Old Dalkeith Road / Ferniehill Road junction.

In summary, a tram can be delivered on the South East corridor, although it will require a range of policy-on measures to ensure success. Tram will encourage mode shift away from car, and the design and resulting capacity constraints will further encourage reduced car travel. Nevertheless, it will be necessary to limit general traffic capacity on the approach to the route, at Liberton Road and the Old Dalkeith Road / Ferniehill Road junction to ensure a reliable tram service.

A Queue Management System, similar to that at Barnton, could help restrict general traffic while providing increased priority for public transport travelling into the city from the south.

Figure 4.7: With-Tram, Princes Street to Nicholson Square



Figure 4.8: Nicholson Street to East Preston Street





Figure 4.9: East Preston Street to Craigmillar Park

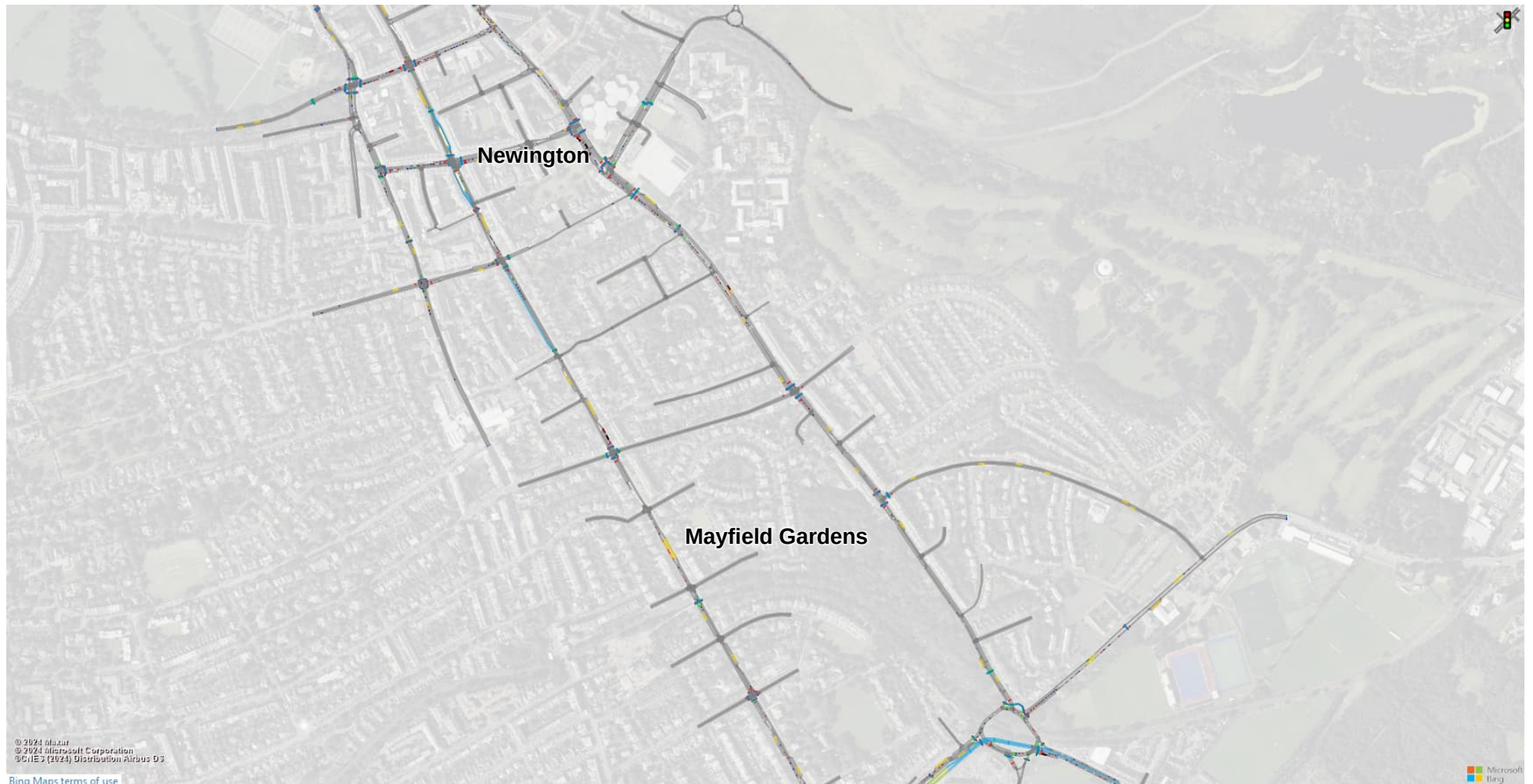




Figure 4.10: Craigmillar Park to Old Dalkeith Road (Cameron Toll)

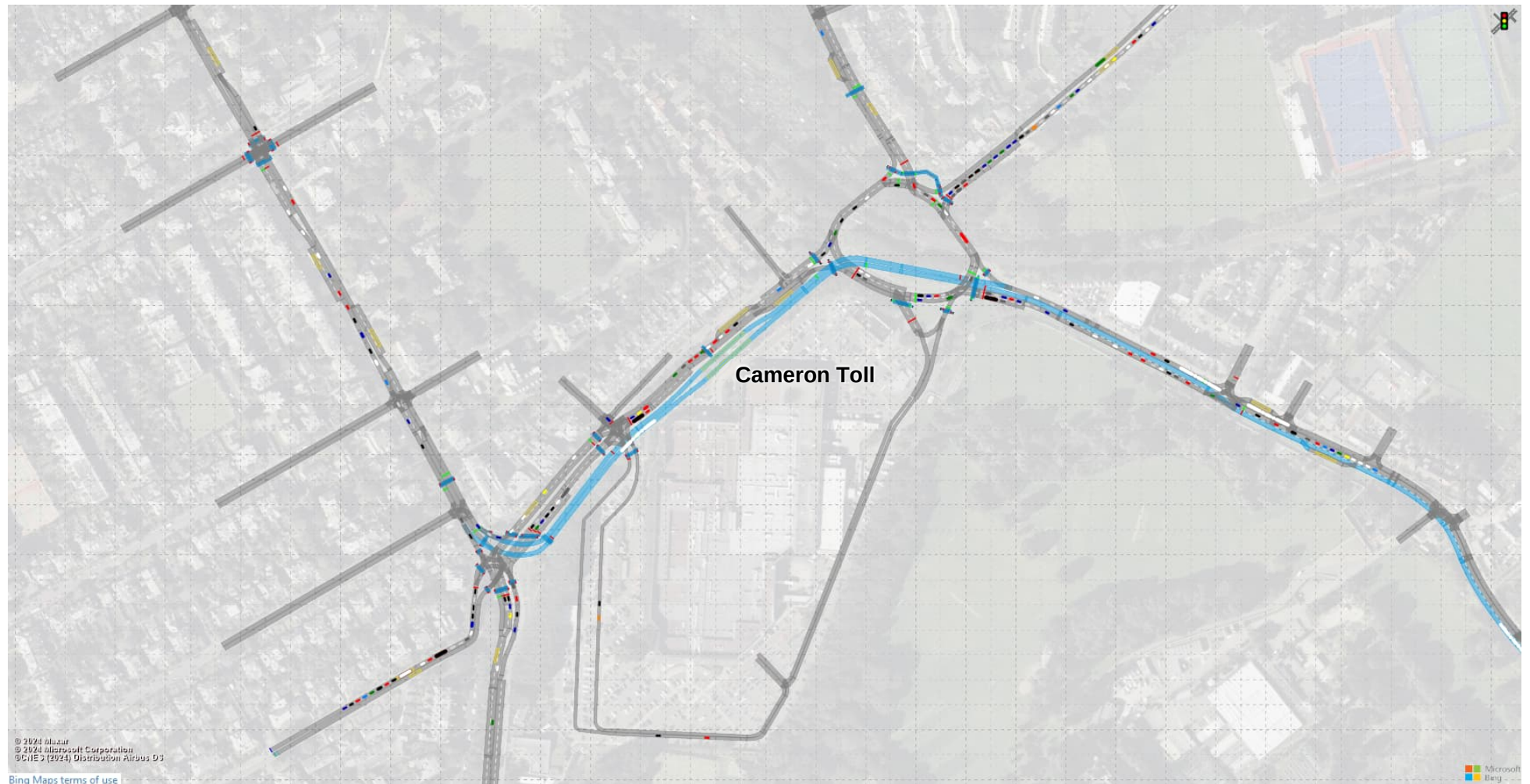


Figure 4.11: Old Dalkeith Road to Royal Infirmary, Edinburgh

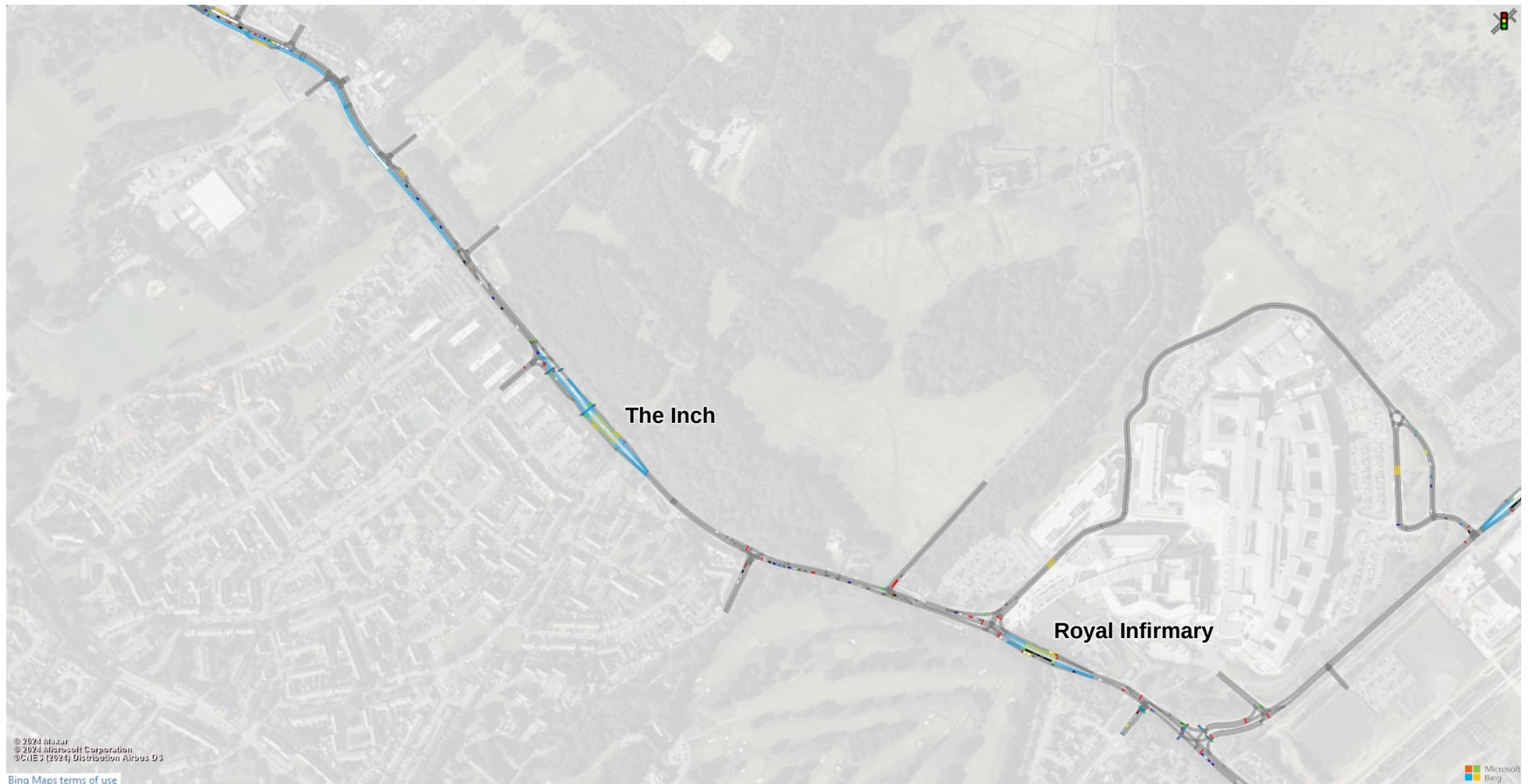
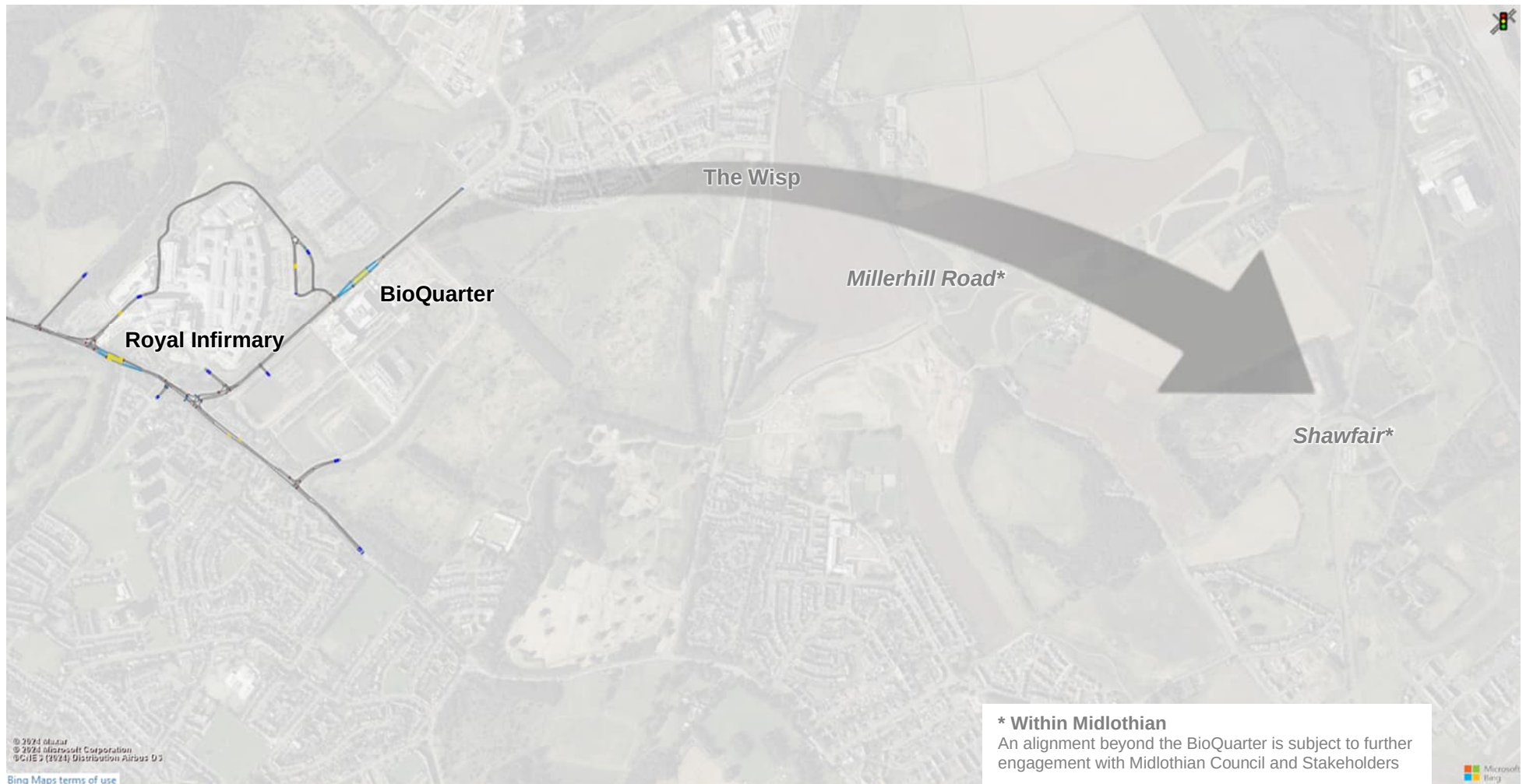


Figure 4.12: Royal Infirmary, Edinburgh to Shawfair



**\* Within Midlothian**

An alignment beyond the BioQuarter is subject to further engagement with Midlothian Council and Stakeholders



#### 4.5 Corridor Tram Journey Times

Table 4.2 summarises average tram journey times between Shawfair and Princes Street.

**Table 4.2: Tram Journey Times – Shawfair to Princes Street**

|                            | AM Peak |         | Interpeak |         |
|----------------------------|---------|---------|-----------|---------|
|                            | Average | Maximum | Average   | Maximum |
| Shawfair to Princes Street | 38 mins | 45 mins | 34 mins   | 34 mins |
| Princes Street to Shawfair | 34 mins | 34 mins | 34 mins   | 34 mins |

The citybound morning peak journey time between Shawfair and Princes Street is approximately 38 minutes; the reverse direction takes approximately 34 minutes.

Interpeak journey times are also around 34 minutes in both directions, which implies that morning peak journeys are delayed by approximately 4 minutes due to congestion.

It should be noted that the above values are average journey times and on one model run, a citybound tram was delayed by nearly 7 minutes over the full route. This variation reflects the complexity of running trams with traffic on the corridor. Additional interventions, including extra modal filters, and wider policy interventions to reduce general traffic could help improve journey time reliability.

It is also important to recognise that modelling is based on an early Candidate Design and that journey times may be improved as part of future detailed design development.

## 5. Summary and Conclusion

### 5.1 Summary Tram Journey Times

Three microsimulation have been developed to support the development of the Trams to Granton Candidate Design:

- Orchard Brae
- Roseburn, and
- South East

These have been used to identify key network constraints and to inform potential junction strategies, stop locations and wider placemaking opportunities for the Trams to Granton, BioQuarter and Beyond SBC. Design development has then helped inform tram journey times for each route. These journey times have subsequently been incorporated into the strategic modelling for the project, informing forecast tram patronage and supporting the wider SBC.

#### 5.1.1 Orchard Brae v Roseburn Tram Journey Times

A key focus of the SBC will be the appraisal for whether the tram route between Granton and the city centre should be via Orchard Brae or Roseburn. A complete multi-criteria assessment is being undertaken as part of the full SBC report, including environmental impacts, heritage, costs, acceptability, etc. The microsimulation models can assist with evaluating some deliverability elements but the primary output from the models are tram journey times and ultimately how these impact tram patronage and revenue.

Table 5.1 summarises the modelled tram journey times via Orchard Brae and Roseburn for the AM and IP. It includes the average travel times and the maximum journey times.

**Table 5.1: Orchard Brae v Roseburn Tram Journey Times**

|                                    | Via Roseburn | Via Orchard Brae | Additional Journey Time Via Orchard Brae |            |
|------------------------------------|--------------|------------------|------------------------------------------|------------|
|                                    | Mins         | Mins             | Mins                                     | Percentage |
| AM Granton to Princes Street (ave) | 26           | 34               | <b>+8</b>                                | +31%       |
| AM Princes Street to Granton (ave) | 25           | 32               | <b>+7</b>                                | +28%       |
| IP Granton to Princes Street (ave) | 25           | 27               | +2                                       | +8%        |
| IP Princes Street to Granton (ave) | 25           | 27               | +2                                       | +8%        |
| AM Granton to Princes Street (max) | 27           | 37               | <b>+10</b>                               | +37%       |
| AM Princes Street to Granton (max) | 26           | 33               | <b>+7</b>                                | +27%       |
| IP Granton to Princes Street (max) | 27           | 28               | +1                                       | +4%        |
| IP Princes Street to Granton (max) | 26           | 30               | +4                                       | +15%       |

Tram journey times via Roseburn are faster than Orchard Brae for all model runs. This is primarily due to Roseburn being off-street while Orchard Brae is regularly delayed travelling in with general traffic. Even with reduced traffic demand assumptions, tram via Orchard Brae encounters significant queues that it cannot bypass due to width constraints on street. This is highlighted With-Tram journey times around 30% slower via Orchard Brae in the AM when traffic volumes are greater compared to 4%-15% in the IP when traffic volumes are lower.

Priority is given to tram at signalised junctions but it is difficult to deliver a green wave for tram through junctions, as occurs elsewhere on Edinburgh's tram network. This is due to traffic pressures and increased complexity of junction arrangements on the Orchard Brae route.

Tram travelling in with traffic also creates reliability issues. This is apparent in the maximum journey times modelled that are notably greater via Orchard Brae than Roseburn. This would lead to timetabling difficulties for the operator and frustration for users.

In addition to faster connectivity with the city centre, Roseburn also offers faster interchange opportunities at Haymarket with train, tram / bus to the airport and employment in the area. The Roseburn route stops at

Haymarket on the way to the city centre, whereas the Orchard Brae route would require interchange at Princes Street before travelling west to Haymarket.

### 5.1.2 Total Route Tram Journey Times

The total tram travel time between Granton and Shawfair is shown in Table 5.2. The table includes journey times via Roseburn and Orchard Brae in the AM and IP with average and maximum modelled times provided.

During the morning peak, via Roseburn is typically 7-8 minutes faster than Orchard Brae on average and 7-10 minutes when maximum travel times are compared. The differential between the two routes is less severe in the IP with only around 2 minutes additional travel time modelled. The exception to this in the IP maximum journey time via Orchard Brae which is over 4 minutes longer.

The greatest reliability concern for the Shawfair section of the route is travelling towards in the city centre in the AM where the maximum modelled journey time is over 7 minutes longer than the average.

**Table 5.2: Total Tram Journey Times – Granton to Shawfair**

| via Roseburn              | AM Peak      |            |              | IP Peak      |            |             |
|---------------------------|--------------|------------|--------------|--------------|------------|-------------|
|                           | Roseburn     | South East | Total        | Roseburn     | South East | Total       |
| Granton to Shawfair (ave) | 26 mins      | 34 mins    | 1 hr         | 25 mins      | 34 mins    | 59 mins     |
| Shawfair to Granton (ave) | 25 mins      | 38 mins    | 1 hr 4 mins  | 25 mins      | 34 mins    | 59 mins     |
| Granton to Shawfair (max) | 27 mins      | 34 mins    | 1 hr 1 min   | 27 mins      | 34 mins    | 1 hr 1 min  |
| Shawfair to Granton (max) | 26 mins      | 45 mins    | 1 hr 11 mins | 26 mins      | 34 mins    | 1 hr        |
| via Orchard Brae          | Orchard Brae | South East | Total        | Orchard Brae | South East | Total       |
|                           |              |            |              |              |            |             |
| Granton to Shawfair (ave) | 34 mins      | 34 mins    | 1 hr 38 mins | 27 mins      | 34 mins    | 1 hr 1 min  |
| Shawfair to Granton (ave) | 32 mins      | 38 mins    | 1 hr 11 mins | 27 mins      | 34 mins    | 1 hr 1 min  |
| Granton to Shawfair (max) | 37 mins      | 34 mins    | 1 hr 11 mins | 28 mins      | 34 mins    | 1 hr 2 mins |
| Shawfair to Granton (max) | 33 mins      | 45 mins    | 1 hr 18 mins | 30 mins      | 34 mins    | 1 hr 4 mins |

## 5.2 Network Constraints / Points of Interest

This microsimulation exercise has helped highlight a number of network constraints on each route section. Potential solutions have been identified for some issues; others will be resolved during the next stage of the project (Outline Business Case) where they can be considered in greater detail.

Key constraints and points of interest are summarised in Table 5.3.

Note that Princes Street is a constraint in terms of the number of trams that can be operated reliably per hour. At this stage, we have assumed a maximum of 20 trams per hour per direction.



**Table 5.3: Potential Network Constraints / Points of Interest**

| Orchard Brae                                                                                                                                                                                                                                                                                       | Roseburn                                                                                                                                                                                                                                                                                              | South East                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alignment at Crewe Toll to be determined                                                                                                                                                                                                                                                           | Constraints relate to landscape, environment and ecology                                                                                                                                                                                                                                              | Princes Street / South St Andrew Street Delta Junction potentially constraints tram capacity                                                                                                                                                        |
| Uncontrolled right turns across tram tracks to be avoided. Access to residential properties on west side of Crewe Road South to be determined                                                                                                                                                      | Largely off-street route results in faster and more reliable journey times                                                                                                                                                                                                                            | North Bridge cross-section impacts ability to provide segregated cycling                                                                                                                                                                            |
| Comely Bank Roundabout to be replaced with signal controlled junction                                                                                                                                                                                                                              | Single tracking of Roseburn to Craigleith section enables tram and active travel provision can be accommodated within the existing track formation.                                                                                                                                                   | South Bridge corridor reduced to 2 or 3 traffic lanes to improve pedestrian environment. Complex signal design required to optimise tram journey times                                                                                              |
| Potential geometric constraints (curve and gradient) at Queensferry Road / Orchard Brae junction may require land take outside the existing carriageway boundary.                                                                                                                                  | Tram crossing at Ferry Road / West Granton Access is the only major crossing on the corridor                                                                                                                                                                                                          | Uncontrolled right turns across tram tracks to be avoided. Access to residential properties on Minto Street / Mayfield Gardens / Craigmillar Park to be determined                                                                                  |
| Only an east facing junction can be delivered between Queensferry Street and Princes Street. Interchange with stops towards the airport would be at Princes Street.                                                                                                                                | Route better serves Haymarket Station and office developments in the West End                                                                                                                                                                                                                         | Craigmillar Park / Liberton Road / Lady Road / Esslemont Road is a major traffic junction with conflicting N-S and E-W traffic movements. With-Tram junction design complex and still results in significant queuing with 70% of Do-Minimum traffic |
| Queensferry Street requires the relocation of busy bus stops to other locations. Limited bus stop capacity potentially restricts future bus passenger growth on the corridor.                                                                                                                      | Interchange is at Haymarket rather than Princes Street, reducing journey times between the corridor and all stops towards the airport                                                                                                                                                                 | Tram is part of a package of interventions to reduce veh-kms. Nevertheless, 'up-stream' capacity constraint may be required as part of wider package of interventions to encourage mode shift                                                       |
| It is not possible to provide adjacent cycling infrastructure between Crewe Toll and the city centre. No segregated cycling provision across Dean Bridge creates a potential safety issue. Similarly, no segregated cycling provision on Orchard Brae; targeted provision only on Crewe Road South | Active travel provision would be retained along the route. Additional cycling provision would be delivered prior to construction, maintaining connectivity. This will include new cycling infrastructure to the east on Queensferry Road, Dean bridge and to the west via Craigleith and Murrayfield. | Cycling would be delivered on parallel Buccleuch Street and Pleasance corridors. Scheme design takes cognisance of Lady Road / Old Dalkeith active travel proposals                                                                                 |

### 5.3 Conclusion

Microsimulation modelling of a new tram route between Granton and the city centre has shown that a route via Roseburn is faster and more reliable than a route via Orchard Brae. This is due to the Roseburn route being largely off-street, with limited traffic interaction. By contrast, a route via Orchard Brae follows the busy Crewe Road South / Orchard Brae and Queensferry Road corridor to Queensferry Street, with multiple complex junctions along the corridor.

Tram via Roseburn has the potential to deliver a step change in public transport provision from the north of the city. Tram compliments existing and improved bus services on the Orchard Brae / Queensferry Road corridor while providing new connectivity to Haymarket and the West End. The route also provides improved interchange with stops westwards towards Edinburgh Park, The Gyle, West Town and the airport.

Conversely, a tram route via Orchard Brae creates potential conflicts between bus and tram. Both modes share the same corridor, but different stopping locations for each means that journey times are impacted, and with wider traffic congestion increased.

Routing tram via Orchard Brae creates a major capacity constraint at Queensferry Street. Available bus capacity is seriously impacted, the location of stops and the space provided for them is constrained, limiting the potential for future passenger growth on the Queensferry Road corridor.

## Trams to Granton, BioQuarter and Beyond Microsimulation Modelling Summary

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Bus priority improvements on the A90 corridor have resulted in major passenger growth on Stagecoach services from Fife. New housing development in Queensferry has helped support improvements to Lothian Country's Service 43, while Lothian continue to expand their city network. In delivering tram on Queensferry Street, continued growth will be severely impacted unless new stop locations can be identified in the city centre.

A tram route to the south east would help deliver major streetscape and placemaking improvements along the South Bridge corridor. This is a densely populated urban environment with one of the highest levels of footfall in the city. Improvements would be focussed around improved pedestrian provision, with wider footways reducing congestion and addressing existing road safety issues around busy bus stops.

Tram would encourage major development at a higher density and faster build out rate at the BioQuarter compared with bus, while also reducing the need to travel by private vehicle. The route also provides enhanced public transport connectivity to the Royal Infirmary, Edinburgh, the University of Edinburgh and retail (and future development opportunities) at Cameron Toll.

Nevertheless, competitive and reliable tram journey times will be dependent on a reduction in traffic along the route. This may require additional restrictions at Liberton Road and Ferniehill Road, as part of a wider policy led package of interventions to encourage mode shift.

## Appendix A. Orchard Brae Model Calibration

# Trams to Granton, BioQuarter and Beyond

## Microsimulation Modelling Summary

**Table A.1: Orchard Brae Model Calibration AM 08:00-09:00**

|                                                       | Movement |      |     | From                   | To                     | Observed Count |     |       |     | VISSIM Model |       |     |      | Criteria 1 - Difference |         |    |       | Criteria 2 - GEH |       |    |       |
|-------------------------------------------------------|----------|------|-----|------------------------|------------------------|----------------|-----|-------|-----|--------------|-------|-----|------|-------------------------|---------|----|-------|------------------|-------|----|-------|
|                                                       | Node     | From | To  |                        |                        | LV             | HV  | Total | LV  | HV           | Total | LV  | LV % | Total                   | Total % | LV | Total | LV               | Total | LV | Total |
| Princes Street / South Charlotte Street               |          |      |     |                        |                        |                |     |       |     |              |       |     |      |                         |         |    |       |                  |       |    |       |
| Site 85                                               | 32       | 123  | 84  | Princes Street E       | South Charlotte Street | 0              | 0   | 0     | 0   | 0            | 0     | 0   | 0%   | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Site 85                                               | 32       | 123  | 79  | Princes Street E       | Princes Street W       | 34             | 129 | 163   | 20  | 128          | 148   | -14 | -41% | -15                     | -9%     | ✓  | ✓     | 2.7              | 1.2   | ✓  | ✓     |
| Site 85                                               | 32       | 69   | 79  | South Charlotte Street | Princes Street W       | 633            | 42  | 675   | 623 | 26           | 649   | -10 | -2%  | -26                     | -4%     | ✓  | ✓     | 0.4              | 1.0   | ✓  | ✓     |
| Site 85                                               | 32       | 69   | 81  | South Charlotte Street | Princes Street E       | 0              | 0   | 0     | 0   | 0            | 0     | 0   | 0%   | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Site 85                                               | 32       | 78   | 81  | Princes Street W       | Princes Street E       | 34             | 125 | 159   | 18  | 116          | 134   | -16 | -47% | -25                     | -16%    | ✓  | ✓     | 3.1              | 2.1   | ✓  | ✓     |
| Site 85                                               | 32       | 78   | 84  | Princes Street W       | South Charlotte Street | 569            | 33  | 602   | 559 | 19           | 578   | -10 | -2%  | -24                     | -4%     | ✓  | ✓     | 0.4              | 1.0   | ✓  | ✓     |
| Princes Street / Lothian Road                         |          |      |     |                        |                        |                |     |       |     |              |       |     |      |                         |         |    |       |                  |       |    |       |
| Site 38                                               | 33       | 79   | 82  | Princes Street E       | Lothian Road           | 500            | 67  | 567   | 627 | 73           | 700   | 127 | 25%  | 133                     | 23%     | ✗  | ✗     | 5.4              | 5.3   | ✗  | ✗     |
| Site 38                                               | 33       | 79   | 75  | Princes Street E       | Princes Street W       | 15             | 92  | 107   | 16  | 81           | 97    | 1   | 7%   | -10                     | -9%     | ✓  | ✓     | 0.3              | 1.0   | ✓  | ✓     |
| Site 38                                               | 33       | 92   | 75  | Lothian Road           | Princes Street W       | 0              | 0   | 0     | 0   | 0            | 0     | 0   | 0%   | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Site 38                                               | 33       | 92   | 78  | Lothian Road           | Princes Street E       | 525            | 62  | 587   | 558 | 53           | 611   | 33  | 6%   | 24                      | 4%      | ✓  | ✓     | 1.4              | 1.0   | ✓  | ✓     |
| Site 38                                               | 33       | 77   | 78  | Princes Street W       | Princes Street E       | 42             | 102 | 144   | 19  | 82           | 101   | -23 | -55% | -43                     | -30%    | ✓  | ✓     | 4.2              | 3.9   | ✓  | ✓     |
| Site 38                                               | 33       | 77   | 82  | Princes Street W       | Lothian Road           | 0              | 0   | 0     | 0   | 0            | 0     | 0   | 0%   | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Princes Street/ Shandwick Pl/ Queensferry Street      |          |      |     |                        |                        |                |     |       |     |              |       |     |      |                         |         |    |       |                  |       |    |       |
| Site 1                                                | 34       | 76   | 5   | Princes Street E       | Queensferry Street     | 5              | 24  | 29    | 8   | 26           | 34    | 3   | 60%  | 5                       | 17%     | ✓  | ✓     | 1.2              | 0.9   | ✓  | ✓     |
| Site 1                                                | 34       | 76   | 74  | Princes Street E       | Shandwick Place        | 16             | 65  | 81    | 8   | 55           | 63    | -8  | -50% | -18                     | -22%    | ✓  | ✓     | 2.3              | 2.1   | ✓  | ✓     |
| Site 1                                                | 34       | 4    | 74  | Queensferry Street     | Shandwick Place        | 0              | 0   | 0     | 0   | 0            | 0     | 0   | 0%   | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Site 1                                                | 34       | 4    | 77  | Queensferry Street     | Princes Street E       | 8              | 26  | 34    | 4   | 26           | 30    | -4  | -50% | -4                      | -12%    | ✓  | ✓     | 1.6              | 0.7   | ✓  | ✓     |
| Site 1                                                | 34       | 67   | 77  | Shandwick Place        | Princes Street E       | 44             | 67  | 111   | 15  | 55           | 70    | -29 | -66% | -41                     | -37%    | ✓  | ✓     | 5.3              | 4.3   | ✗  | ✓     |
| Site 1                                                | 34       | 67   | 5   | Shandwick Place        | Queensferry Street     | 0              | 0   | 0     | 0   | 0            | 0     | 0   | 0%   | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Melville Street                                       |          |      |     |                        |                        |                |     |       |     |              |       |     |      |                         |         |    |       |                  |       |    |       |
| Site 79                                               | 1        | 5    | 3   | Melville St Eastbound  |                        | 171            | 11  | 182   | 106 | 6            | 112   | -65 | -38% | -70                     | -38%    | ✓  | ✓     | 5.5              | 5.8   | ✗  | ✗     |
| Site 79                                               | 1        | 221  | 2   | Melville St Westbound  |                        | 147            | 5   | 152   | 129 | 1            | 130   | -18 | -12% | -22                     | -14%    | ✓  | ✓     | 1.5              | 1.9   | ✓  | ✓     |
| Randolph Place / Randolph Crescent / Drumsheugh Place |          |      |     |                        |                        |                |     |       |     |              |       |     |      |                         |         |    |       |                  |       |    |       |
| Site 29                                               | 35       | 2    | 116 | Randolph Place         | Randolph Crescent      | 0              | 0   | 0     | 0   | 0            | 0     | 0   | 0%   | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Site 29                                               | 35       | 2    | 45  | Randolph Place         | Drumsheugh Place       | 159            | 41  | 200   | 171 | 38           | 209   | 12  | 8%   | 9                       | 5%      | ✓  | ✓     | 0.9              | 0.6   | ✓  | ✓     |
| Site 29                                               | 35       | 116  | 45  | Randolph Crescent      | Drumsheugh Place       | 278            | 14  | 292   | 268 | 8            | 276   | -10 | -4%  | -16                     | -5%     | ✓  | ✓     | 0.6              | 0.9   | ✓  | ✓     |
| Site 29                                               | 35       | 116  | 1   | Randolph Crescent      | Randolph Place         | 85             | 5   | 90    | 86  | 4            | 90    | 1   | 1%   | 0                       | 0%      | ✓  | ✓     | 0.1              | 0.0   | ✓  | ✓     |
| Site 29                                               | 35       | 1    | 1   | Drumsheugh Place       | Randolph Place         | 153            | 41  | 194   | 149 | 41           | 190   | -4  | -3%  | -4                      | -2%     | ✓  | ✓     | 0.3              | 0.3   | ✓  | ✓     |
| Site 29                                               | 35       | 1    | 116 | Drumsheugh Place       | Randolph Crescent      | 0              | 0   | 0     | 0   | 0            | 0     | 0   | 0%   | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Drumsheugh Gardens                                    |          |      |     |                        |                        |                |     |       |     |              |       |     |      |                         |         |    |       |                  |       |    |       |
| Site 78                                               | 36       | 31   | 16  | Drums'gh Gdns Wbnd     |                        | 246            | 6   | 252   | 248 | 10           | 258   | 2   | 1%   | 6                       | 2%      | ✓  | ✓     | 0.1              | 0.4   | ✓  | ✓     |
| Site 78                                               | 36       | 45   | 32  | Drums'gh Gdns Wbnd     |                        | 238            | 5   | 243   | 216 | 9            | 225   | -22 | -9%  | -18                     | -7%     | ✓  | ✓     | 1.5              | 1.2   | ✓  | ✓     |
| Drumsheugh Place / Randolph Crescent / Lynedoch Place |          |      |     |                        |                        |                |     |       |     |              |       |     |      |                         |         |    |       |                  |       |    |       |
| Site 30                                               | 7        | 16   | 24  | Drumsheugh Place       | Randolph Crescent      | 257            | 9   | 266   | 250 | 9            | 259   | -7  | -3%  | -7                      | -3%     | ✓  | ✓     | 0.4              | 0.4   | ✓  | ✓     |



## Trams to Granton, BioQuarter and Beyond Microsimulation Modelling Summary

|                                                           | Movement |      |     |                   |                   | Observed Count |    |       |     |    |       | VISSIM Model |      | Criteria 1 - Difference |         |    |       | Criteria 2 - GEH |       |    |       |
|-----------------------------------------------------------|----------|------|-----|-------------------|-------------------|----------------|----|-------|-----|----|-------|--------------|------|-------------------------|---------|----|-------|------------------|-------|----|-------|
|                                                           | Node     | From | To  |                   |                   | LV             | HV | Total | LV  | HV | Total | LV           | LV % | Total                   | Total % | LV | Total | LV               | Total | LV | Total |
| Site 30                                                   | 7        | 16   | 15  | Drumsheugh Place  | Lynedoch Place    | 323            | 43 | 366   | 357 | 39 | 396   | 34           | 11%  | 30                      | 8%      | ✓  | ✓     | 1.8              | 1.5   | ✓  | ✓     |
| Site 30                                                   | 7        | 24   | 15  | Randolph Crescent | Lynedoch Place    | 0              | 0  | 0     | 0   | 0  | 0     | 0            | 0%   | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Site 30                                                   | 7        | 24   | 13  | Randolph Crescent | Drumsheugh Place  | 0              | 0  | 0     | 0   | 0  | 0     | 0            | 0%   | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Site 30                                                   | 7        | 13   | 13  | Lynedoch Place    | Drumsheugh Place  | 279            | 43 | 322   | 288 | 42 | 330   | 9            | 3%   | 8                       | 2%      | ✓  | ✓     | 0.5              | 0.4   | ✓  | ✓     |
| Site 30                                                   | 7        | 13   | 24  | Lynedoch Place    | Randolph Crescent | 316            | 7  | 323   | 306 | 2  | 308   | -10          | -3%  | -15                     | -5%     | ✓  | ✓     | 0.6              | 0.8   | ✓  | ✓     |
| Site 30                                                   | 7        | 16   | 24  | Drumsheugh Place  | Randolph Crescent | 257            | 9  | 266   | 250 | 9  | 259   | -7           | -3%  | -7                      | -3%     | ✓  | ✓     | 0.4              | 0.4   | ✓  | ✓     |
| <b>Queensferry Road/ Orchard Brae / Dean Path</b>         |          |      |     |                   |                   |                |    |       |     |    |       |              |      |                         |         |    |       |                  |       |    |       |
| Site 109                                                  | 5        | 18   | 28  | Queensferry Rd E  | Dean Path         | 77             | 0  | 77    | 73  | 0  | 73    | -4           | -5%  | -4                      | -5%     | ✓  | ✓     | 0.5              | 0.5   | ✓  | ✓     |
| Site 109                                                  | 5        | 18   | 14  | Queensferry Rd E  | Queensferry Rd W  | 232            | 27 | 259   | 210 | 25 | 235   | -22          | -9%  | -24                     | -9%     | ✓  | ✓     | 1.5              | 1.5   | ✓  | ✓     |
| Site 109                                                  | 5        | 18   | 25  | Queensferry Rd E  | Orchard Brae      | 55             | 15 | 70    | 61  | 14 | 75    | 6            | 11%  | 5                       | 7%      | ✓  | ✓     | 0.8              | 0.6   | ✓  | ✓     |
| Site 109                                                  | 5        | 27   | 14  | Dean Path         | Queensferry Rd W  | 23             | 7  | 30    | 20  | 0  | 20    | -3           | -13% | -10                     | -33%    | ✓  | ✓     | 0.6              | 2.0   | ✓  | ✓     |
| Site 109                                                  | 5        | 27   | 25  | Dean Path         | Orchard Brae      | 86             | 0  | 86    | 83  | 2  | 85    | -3           | -3%  | -1                      | -1%     | ✓  | ✓     | 0.3              | 0.1   | ✓  | ✓     |
| Site 109                                                  | 5        | 27   | 12  | Dean Path         | Queensferry Rd E  | 55             | 1  | 56    | 56  | 0  | 56    | 1            | 2%   | 0                       | 0%      | ✓  | ✓     | 0.1              | 0.0   | ✓  | ✓     |
| Site 109                                                  | 5        | 153  | 25  | Queensferry Rd W  | Orchard Brae      | 84             | 4  | 88    | 97  | 2  | 99    | 13           | 15%  | 11                      | 13%     | ✓  | ✓     | 1.4              | 1.1   | ✓  | ✓     |
| Site 109                                                  | 5        | 153  | 12  | Queensferry Rd W  | Queensferry Rd E  | 374            | 31 | 405   | 329 | 24 | 353   | -45          | -12% | -52                     | -13%    | ✓  | ✓     | 2.4              | 2.7   | ✓  | ✓     |
| Site 109                                                  | 5        | 153  | 28  | Queensferry Rd W  | Dean Path         | 0              | 0  | 0     | 0   | 0  | 0     | 0            | 0%   | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Site 109                                                  | 5        | 112  | 14  | Orchard Brae      | Queensferry Rd W  | 61             | 4  | 65    | 64  | 2  | 66    | 3            | 5%   | 1                       | 2%      | ✓  | ✓     | 0.4              | 0.1   | ✓  | ✓     |
| Site 109                                                  | 5        | 112  | 28  | Orchard Brae      | Dean Path         | 122            | 2  | 124   | 110 | 1  | 111   | -12          | -10% | -13                     | -10%    | ✓  | ✓     | 1.1              | 1.2   | ✓  | ✓     |
| Site 109                                                  | 5        | 112  | 12  | Orchard Brae      | Queensferry Rd E  | 119            | 24 | 143   | 124 | 17 | 141   | 5            | 4%   | -2                      | -1%     | ✓  | ✓     | 0.5              | 0.2   | ✓  | ✓     |
| <b>Comely Bank Road / Orchard Brae / Crewe Road South</b> |          |      |     |                   |                   |                |    |       |     |    |       |              |      |                         |         |    |       |                  |       |    |       |
| Site 63                                                   | 2        | 25   | 134 | Orchard Brae      | Orchard Road      | 4              | 0  | 4     | 6   | 1  | 7     | 2            | 50%  | 3                       | 75%     | ✓  | ✓     | 0.9              | 1.3   | ✓  | ✓     |
| Site 63                                                   | 2        | 25   | 34  | Orchard Brae      | Craigleith Road   | 10             | 1  | 11    | 10  | 2  | 12    | 0            | 0%   | 1                       | 9%      | ✓  | ✓     | 0.0              | 0.3   | ✓  | ✓     |
| Site 63                                                   | 2        | 25   | 38  | Orchard Brae      | Crewe Road South  | 144            | 13 | 157   | 155 | 14 | 169   | 11           | 8%   | 12                      | 8%      | ✓  | ✓     | 0.9              | 0.9   | ✓  | ✓     |
| Site 63                                                   | 2        | 25   | 35  | Orchard Brae      | Comely Bank Road  | 53             | 3  | 56    | 54  | 1  | 55    | 1            | 2%   | -1                      | -2%     | ✓  | ✓     | 0.1              | 0.1   | ✓  | ✓     |
| Site 63                                                   | 2        | 146  | 34  | Orchard Road      | Craigleith Road   | 9              | 0  | 9     | 7   | 0  | 7     | -2           | -22% | -2                      | -22%    | ✓  | ✓     | 0.7              | 0.7   | ✓  | ✓     |
| Site 63                                                   | 2        | 146  | 38  | Orchard Road      | Crewe Road South  | 110            | 2  | 112   | 98  | 4  | 102   | -12          | -11% | -10                     | -9%     | ✓  | ✓     | 1.2              | 1.0   | ✓  | ✓     |
| Site 63                                                   | 2        | 146  | 35  | Orchard Road      | Comely Bank Road  | 99             | 2  | 101   | 69  | 1  | 70    | -30          | -30% | -31                     | -31%    | ✓  | ✓     | 3.3              | 3.4   | ✓  | ✓     |
| Site 63                                                   | 2        | 146  | 110 | Orchard Road      | Orchard Brae      | 6              | 0  | 6     | 9   | 0  | 9     | 3            | 50%  | 3                       | 50%     | ✓  | ✓     | 1.1              | 1.1   | ✓  | ✓     |
| Site 63                                                   | 2        | 108  | 38  | Craigleith Road   | Crewe Road South  | 73             | 2  | 75    | 62  | 8  | 70    | -11          | -15% | -5                      | -7%     | ✓  | ✓     | 1.3              | 0.6   | ✓  | ✓     |
| Site 63                                                   | 2        | 108  | 35  | Craigleith Road   | Comely Bank Road  | 261            | 7  | 268   | 281 | 5  | 286   | 20           | 8%   | 18                      | 7%      | ✓  | ✓     | 1.2              | 1.1   | ✓  | ✓     |
| Site 63                                                   | 2        | 108  | 110 | Craigleith Road   | Orchard Brae      | 18             | 0  | 18    | 22  | 1  | 23    | 4            | 22%  | 5                       | 28%     | ✓  | ✓     | 0.9              | 1.1   | ✓  | ✓     |
| Site 63                                                   | 2        | 108  | 134 | Craigleith Road   | Orchard Road      | 5              | 0  | 5     | 9   | 0  | 9     | 4            | 80%  | 4                       | 80%     | ✓  | ✓     | 1.5              | 1.5   | ✓  | ✓     |
| Site 63                                                   | 2        | 212  | 35  | Crewe Road South  | Comely Bank Road  | 66             | 8  | 74    | 61  | 2  | 63    | -5           | -8%  | -11                     | -15%    | ✓  | ✓     | 0.6              | 1.3   | ✓  | ✓     |
| Site 63                                                   | 2        | 212  | 110 | Crewe Road South  | Orchard Brae      | 236            | 25 | 261   | 211 | 19 | 230   | -25          | -11% | -31                     | -12%    | ✓  | ✓     | 1.7              | 2.0   | ✓  | ✓     |
| Site 63                                                   | 2        | 212  | 134 | Crewe Road South  | Orchard Road      | 64             | 0  | 64    | 59  | 0  | 59    | -5           | -8%  | -5                      | -8%     | ✓  | ✓     | 0.6              | 0.6   | ✓  | ✓     |
| Site 63                                                   | 2        | 212  | 34  | Crewe Road South  | Craigleith Road   | 102            | 4  | 106   | 100 | 1  | 101   | -2           | -2%  | -5                      | -5%     | ✓  | ✓     | 0.2              | 0.5   | ✓  | ✓     |
| Site 63                                                   | 2        | 230  | 110 | Comely Bank Road  | Orchard Brae      | 67             | 2  | 69    | 48  | 0  | 48    | -19          | -28% | -21                     | -30%    | ✓  | ✓     | 2.5              | 2.7   | ✓  | ✓     |
| Site 63                                                   | 2        | 230  | 134 | Comely Bank Road  | Orchard Road      | 76             | 1  | 77    | 50  | 0  | 50    | -26          | -34% | -27                     | -35%    | ✓  | ✓     | 3.3              | 3.4   | ✓  | ✓     |

## Trams to Granton, BioQuarter and Beyond

### Microsimulation Modelling Summary

|                                                         | Movement |       |       | From                  | To                    | Observed Count |    |       |     | VISSIM Model |       |        |      | Criteria 1 - Difference |         |    |       | Criteria 2 - GEH |       |    |       |
|---------------------------------------------------------|----------|-------|-------|-----------------------|-----------------------|----------------|----|-------|-----|--------------|-------|--------|------|-------------------------|---------|----|-------|------------------|-------|----|-------|
|                                                         | Node     | From  | To    |                       |                       | LV             | HV | Total | LV  | HV           | Total | LV     | LV % | Total                   | Total % | LV | Total | LV               | Total | LV | Total |
| Site 63                                                 | 2        | 230   | 34    | Comely Bank Road      | Craigleith Road       | 297            | 5  | 302   | 287 | 6            | 293   | -10    | -3%  | -9                      | -3%     | ✓  | ✓     | 0.6              | 0.5   | ✓  | ✓     |
| Site 63                                                 | 2        | 230   | 38    | Comely Bank Road      | Crewe Road South      | 69             | 8  | 77    | 56  | 1            | 57    | -13    | -19% | -20                     | -26%    | ✓  | ✓     | 1.6              | 2.4   | ✓  | ✓     |
| Crewe Toll - Crewe Road South / Ferry Road Telford Road |          |       |       |                       |                       |                |    |       |     |              |       |        |      |                         |         |    |       |                  |       |    |       |
| Site 64                                                 | 8        | 56    | 55    | Crewe Road South      | Telford Road          | 75             | 4  | 79    | 77  | 0            | 77    | 2      | 3%   | -2                      | -3%     | ✓  | ✓     | 0.2              | 0.2   | ✓  | ✓     |
| Site 64                                                 | 8        | 56    | 53    | Crewe Road South      | Ferry Road W          | 176            | 11 | 187   | 169 | 13           | 182   | -7     | -4%  | -5                      | -3%     | ✓  | ✓     | 0.5              | 0.4   | ✓  | ✓     |
| Site 64                                                 | 8        | 56    | 50    | Crewe Road South      | Crewe Road North      | 114            | 14 | 128   | 107 | 1            | 108   | -7     | -6%  | -20                     | -16%    | ✓  | ✓     | 0.7              | 1.8   | ✓  | ✓     |
| Site 64                                                 | 8        | 56    | 46    | Crewe Road South      | Ferry Road E          | 70             | 2  | 72    | 69  | 2            | 71    | -1     | -1%  | -1                      | -1%     | ✓  | ✓     | 0.1              | 0.1   | ✓  | ✓     |
| Site 64                                                 | 8        | 99    | 53    | Telford Road          | Ferry Road W          | 90             | 5  | 95    | 94  | 1            | 95    | 4      | 4%   | 0                       | 0%      | ✓  | ✓     | 0.4              | 0.0   | ✓  | ✓     |
| Site 64                                                 | 8        | 99    | 50    | Telford Road          | Crewe Road North      | 124            | 13 | 137   | 97  | 12           | 109   | -27    | -22% | -28                     | -20%    | ✓  | ✓     | 2.6              | 2.5   | ✓  | ✓     |
| Site 64                                                 | 8        | 99    | 46    | Telford Road          | Ferry Road E          | 393            | 24 | 417   | 366 | 24           | 390   | -27    | -7%  | -27                     | -6%     | ✓  | ✓     | 1.4              | 1.3   | ✓  | ✓     |
| Site 64                                                 | 8        | 99    | 60    | Telford Road          | Crewe Road South      | 59             | 5  | 64    | 61  | 2            | 63    | 2      | 3%   | -1                      | -2%     | ✓  | ✓     | 0.3              | 0.1   | ✓  | ✓     |
| Site 64                                                 | 8        | 23    | 50    | Ferry Road W          | Crewe Road North      | 50             | 2  | 52    | 50  | 3            | 53    | 0      | 0%   | 1                       | 2%      | ✓  | ✓     | 0.0              | 0.1   | ✓  | ✓     |
| Site 64                                                 | 8        | 23    | 46    | Ferry Road W          | Ferry Road E          | 168            | 10 | 178   | 175 | 2            | 177   | 7      | 4%   | -1                      | -1%     | ✓  | ✓     | 0.5              | 0.1   | ✓  | ✓     |
| Site 64                                                 | 8        | 23    | 60    | Ferry Road W          | Crewe Road South      | 219            | 13 | 232   | 214 | 13           | 227   | -5     | -2%  | -5                      | -2%     | ✓  | ✓     | 0.3              | 0.3   | ✓  | ✓     |
| Site 64                                                 | 8        | 23    | 55    | Ferry Road W          | Telford Road          | 45             | 8  | 53    | 40  | 3            | 43    | -5     | -11% | -10                     | -19%    | ✓  | ✓     | 0.8              | 1.4   | ✓  | ✓     |
| Site 64                                                 | 8        | 61    | 46    | Crewe Road North      | Ferry Road E          | 69             | 0  | 69    | 58  | 3            | 61    | -11    | -16% | -8                      | -12%    | ✓  | ✓     | 1.4              | 1.0   | ✓  | ✓     |
| Site 64                                                 | 8        | 61    | 60    | Crewe Road North      | Crewe Road South      | 204            | 10 | 214   | 210 | 0            | 210   | 6      | 3%   | -4                      | -2%     | ✓  | ✓     | 0.4              | 0.3   | ✓  | ✓     |
| Site 64                                                 | 8        | 61    | 55    | Crewe Road North      | Telford Road          | 169            | 7  | 176   | 139 | 6            | 145   | -30    | -18% | -31                     | -18%    | ✓  | ✓     | 2.4              | 2.4   | ✓  | ✓     |
| Site 64                                                 | 8        | 61    | 53    | Crewe Road North      | Ferry Road W          | 41             | 0  | 41    | 51  | 4            | 55    | 10     | 24%  | 14                      | 34%     | ✓  | ✓     | 1.5              | 2.0   | ✓  | ✓     |
| Site 64                                                 | 8        | 48    | 60    | Ferry Road E          | Crewe Road South      | 76             | 1  | 77    | 74  | 0            | 74    | -2     | -3%  | -3                      | -4%     | ✓  | ✓     | 0.2              | 0.3   | ✓  | ✓     |
| Site 64                                                 | 8        | 48    | 55    | Ferry Road E          | Telford Road          | 399            | 16 | 415   | 383 | 15           | 398   | -16    | -4%  | -17                     | -4%     | ✓  | ✓     | 0.8              | 0.8   | ✓  | ✓     |
| Site 64                                                 | 8        | 48    | 53    | Ferry Road E          | Ferry Road W          | 206            | 11 | 217   | 210 | 8            | 218   | 4      | 2%   | 1                       | 0%      | ✓  | ✓     | 0.3              | 0.1   | ✓  | ✓     |
| Site 64                                                 | 8        | 48    | 50    | Ferry Road E          | Crewe Road North      | 67             | 2  | 69    | 60  | 3            | 63    | -7     | -10% | -6                      | -9%     | ✓  | ✓     | 0.9              | 0.7   | ✓  | ✓     |
| West Granton Road / West Granton Access                 |          |       |       |                       |                       |                |    |       |     |              |       |        |      |                         |         |    |       |                  |       |    |       |
|                                                         | 69       | 10066 | 10071 | West Granton Rd W     | Waterfront Broadway   | 94             | 5  | 99    | 93  | 2            | 95    | -1.05  | -1%  | -4                      | -4%     | ✓  | ✓     | 0.1              | 0.4   | ✓  | ✓     |
|                                                         | 69       | 10066 | 10072 | West Granton Rd W     | West Granton Rd E     | 371            | 20 | 390   | 319 | 12           | 331   | -51.5  | -14% | -59                     | -15%    | ✓  | ✓     | 2.8              | 3.1   | ✓  | ✓     |
|                                                         | 69       | 10066 | 10070 | West Granton Rd W     | West Granton Access   | 53             | 3  | 56    | 54  | 1            | 55    | 0.8    | 2%   | -1                      | -2%     | ✓  | ✓     | 0.1              | 0.1   | ✓  | ✓     |
|                                                         | 69       | 10068 | 10072 | Waterfront Broadway   | West Granton Rd E     | 41             | 2  | 43    | 44  | 1            | 45    | 3.15   | 8%   | 2                       | 5%      | ✓  | ✓     | 0.5              | 0.3   | ✓  | ✓     |
|                                                         | 69       | 10068 | 10070 | Waterfront Broadway   | West Granton Access   | 108            | 6  | 114   | 117 | 7            | 124   | 8.7    | 8%   | 10                      | 9%      | ✓  | ✓     | 0.8              | 0.9   | ✓  | ✓     |
|                                                         | 69       | 10068 | 10069 | Waterfront Broadway   | West Granton Rd W     | 65             | 3  | 68    | 58  | 1            | 59    | -6.6   | -10% | -9                      | -13%    | ✓  | ✓     | 0.8              | 1.1   | ✓  | ✓     |
|                                                         | 69       | 10067 | 10070 | West Granton Rd E     | West Granton Access   | 218            | 11 | 229   | 206 | 6            | 212   | -11.55 | -5%  | -17                     | -7%     | ✓  | ✓     | 0.8              | 1.1   | ✓  | ✓     |
|                                                         | 69       | 10067 | 10069 | West Granton Rd E     | West Granton Rd W     | 306            | 16 | 322   | 348 | 7            | 355   | 42.1   | 14%  | 33                      | 10%     | ✓  | ✓     | 2.3              | 1.8   | ✓  | ✓     |
|                                                         | 69       | 10067 | 10071 | West Granton Rd E     | Waterfront Broadway   | 46             | 2  | 48    | 42  | 0            | 42    | -3.6   | -8%  | -6                      | -13%    | ✓  | ✓     | 0.5              | 0.9   | ✓  | ✓     |
|                                                         | 69       | 10065 | 10069 | West Granton Access   | West Granton Rd W     | 62             | 3  | 65    | 61  | 2            | 63    | -0.75  | -1%  | -2                      | -3%     | ✓  | ✓     | 0.1              | 0.3   | ✓  | ✓     |
|                                                         | 69       | 10065 | 10071 | West Granton Access   | Waterfront Broadway   | 155            | 8  | 163   | 162 | 10           | 172   | 7.15   | 5%   | 9                       | 6%      | ✓  | ✓     | 0.6              | 0.7   | ✓  | ✓     |
|                                                         | 69       | 10065 | 10072 | West Granton Access   | West Granton Rd E     | 198            | 10 | 208   | 191 | 5            | 196   | -6.6   | -3%  | -12                     | -6%     | ✓  | ✓     | 0.5              | 0.8   | ✓  | ✓     |
| Waterfront Broadway / Morrisons                         |          |       |       |                       |                       |                |    |       |     |              |       |        |      |                         |         |    |       |                  |       |    |       |
|                                                         | 75       | 10068 | 10068 | Waterfront Broadway N | Waterfront Broadway S | 144            | 8  | 152   | 166 | 9            | 175   | 21.6   | 15%  | 23                      | 15%     | ✓  | ✓     | 1.7              | 1.8   | ✓  | ✓     |

## Trams to Granton, BioQuarter and Beyond Microsimulation Modelling Summary

|                                              | Movement |       |       |                       |                       | Observed Count |    |       |     |    |       | VISSIM Model |       | Criteria 1 - Difference |         |    |       | Criteria 2 - GEH |       |    |       |
|----------------------------------------------|----------|-------|-------|-----------------------|-----------------------|----------------|----|-------|-----|----|-------|--------------|-------|-------------------------|---------|----|-------|------------------|-------|----|-------|
|                                              | Node     | From  | To    |                       |                       | LV             | HV | Total | LV  | HV | Total | LV           | LV %  | Total                   | Total % | LV | Total | LV               | Total | LV | Total |
|                                              | 75       | 10068 | 236   | Waterfront Broadway N | Morrisons             | 18             | 1  | 19    | 20  | 2  | 22    | 1.95         | 11%   | 3                       | 16%     | ✓  | ✓     | 0.4              | 0.7   | ✓  | ✓     |
|                                              | 75       | 10074 | 236   | Waterfront Broadway S | Morrisons             | 60             | 3  | 63    | 59  | 3  | 62    | -0.85        | -1%   | -1                      | -2%     | ✓  | ✓     | 0.1              | 0.1   | ✓  | ✓     |
|                                              | 75       | 10074 | 10074 | Waterfront Broadway S | Waterfront Broadway N | 215            | 11 | 226   | 238 | 9  | 247   | 23.3         | 11%   | 21                      | 9%      | ✓  | ✓     | 1.5              | 1.4   | ✓  | ✓     |
|                                              | 75       | 238   | 10074 | Morrisons             | Waterfront Broadway N | 18             | 1  | 19    | 17  | 0  | 17    | -1.05        | -6%   | -2                      | -11%    | ✓  | ✓     | 0.3              | 0.5   | ✓  | ✓     |
|                                              | 75       | 238   | 10068 | Morrisons             | Waterfront Broadway S | 45             | 2  | 47    | 51  | 0  | 51    | 6.35         | 14%   | 4                       | 9%      | ✓  | ✓     | 0.9              | 0.6   | ✓  | ✓     |
| <b>Waterfront Avenue / Waterfront Park</b>   |          |       |       |                       |                       |                |    |       |     |    |       |              |       |                         |         |    |       |                  |       |    |       |
|                                              | 70       | 193   | 196   | Waterfront Broadway N | Waterfront Avenue     | 5              | 0  | 5     | 7   | 0  | 7     | 2.25         | 47%   | 2                       | 40%     | ✓  | ✓     | 0.9              | 0.8   | ✓  | ✓     |
|                                              | 70       | 193   | 10304 | Waterfront Broadway N | Waterfront Broadway S | 12             | 1  | 13    | 13  | 1  | 14    | 0.65         | 5%    | 1                       | 8%      | ✓  | ✓     | 0.2              | 0.3   | ✓  | ✓     |
|                                              | 70       | 193   | 198   | Waterfront Broadway N | Waterfront Park       | 0              | 0  | 0     | 0   | 0  | 0     | 0            | 0%    | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
|                                              | 70       | 192   | 10304 | Waterfront Avenue     | Waterfront Broadway S | 113            | 6  | 119   | 130 | 10 | 140   | 16.95        | 15%   | 21                      | 18%     | ✓  | ✓     | 1.5              | 1.8   | ✓  | ✓     |
|                                              | 70       | 192   | 198   | Waterfront Avenue     | Waterfront Park       | 21             | 1  | 22    | 18  | 2  | 20    | -2.9         | -14%  | -2                      | -9%     | ✓  | ✓     | 0.7              | 0.4   | ✓  | ✓     |
|                                              | 70       | 192   | 199   | Waterfront Avenue     | Waterfront Broadway N | 6              | 0  | 6     | 6   | 0  | 6     | 0.3          | 5%    | 0                       | 0%      | ✓  | ✓     | 0.1              | 0.0   | ✓  | ✓     |
|                                              | 70       | 191   | 198   | Waterfront Broadway S | Waterfront Park       | 17             | 1  | 18    | 18  | 1  | 19    | 0.9          | 5%    | 1                       | 6%      | ✓  | ✓     | 0.2              | 0.2   | ✓  | ✓     |
|                                              | 70       | 191   | 199   | Waterfront Broadway S | Waterfront Broadway N | 30             | 2  | 32    | 37  | 2  | 39    | 6.6          | 22%   | 7                       | 22%     | ✓  | ✓     | 1.1              | 1.2   | ✓  | ✓     |
|                                              | 70       | 191   | 196   | Waterfront Broadway S | Waterfront Avenue     | 185            | 10 | 195   | 196 | 6  | 202   | 10.75        | 6%    | 7                       | 4%      | ✓  | ✓     | 0.8              | 0.5   | ✓  | ✓     |
|                                              | 70       | 194   | 199   | Waterfront Park       | Waterfront Broadway N | 2              | 0  | 2     | 0   | 0  | 0     | -1.9         | -100% | -2                      | -100%   | ✓  | ✓     | 1.9              | 2.0   | ✓  | ✓     |
|                                              | 70       | 194   | 196   | Waterfront Park       | Waterfront Avenue     | 48             | 3  | 50    | 43  | 4  | 47    | -4.5         | -9%   | -3                      | -6%     | ✓  | ✓     | 0.7              | 0.4   | ✓  | ✓     |
|                                              | 70       | 194   | 10304 | Waterfront Park       | Waterfront Broadway S | 38             | 2  | 40    | 42  | 0  | 42    | 4            | 11%   | 2                       | 5%      | ✓  | ✓     | 0.6              | 0.3   | ✓  | ✓     |
| <b>Waterfront Avenue / Saltire Street</b>    |          |       |       |                       |                       |                |    |       |     |    |       |              |       |                         |         |    |       |                  |       |    |       |
|                                              | 72       | 10388 | 10194 | Saltire Street        | Waterfront Avenue E   | 12             | 1  | 13    | 4   | 1  | 5     | -8.35        | -68%  | -8                      | -62%    | ✓  | ✓     | 2.9              | 2.7   | ✓  | ✓     |
|                                              | 72       | 10388 | 10329 | Saltire Street        | Waterfront Avenue W   | 7              | 0  | 7     | 5   | 0  | 5     | -1.65        | -25%  | -2                      | -29%    | ✓  | ✓     | 0.7              | 0.8   | ✓  | ✓     |
|                                              | 72       | 10329 | 10329 | Waterfront Avenue E   | Waterfront Avenue W   | 124            | 7  | 130   | 140 | 12 | 152   | 16.5         | 13%   | 22                      | 17%     | ✓  | ✓     | 1.4              | 1.9   | ✓  | ✓     |
|                                              | 72       | 10329 | 10227 | Waterfront Avenue E   | Saltire Street        | 3              | 0  | 3     | 2   | 0  | 2     | -0.85        | -30%  | -1                      | -33%    | ✓  | ✓     | 0.5              | 0.6   | ✓  | ✓     |
|                                              | 72       | 10194 | 10227 | Waterfront Avenue W   | Saltire Street        | 5              | 0  | 5     | 7   | 0  | 7     | 2.25         | 47%   | 2                       | 40%     | ✓  | ✓     | 0.9              | 0.8   | ✓  | ✓     |
|                                              | 72       | 10194 | 10194 | Waterfront Avenue W   | Waterfront Avenue E   | 215            | 11 | 226   | 236 | 10 | 246   | 21.3         | 10%   | 20                      | 9%      | ✓  | ✓     | 1.4              | 1.3   | ✓  | ✓     |
| <b>Waterfront Avenue / West Harbour Road</b> |          |       |       |                       |                       |                |    |       |     |    |       |              |       |                         |         |    |       |                  |       |    |       |
|                                              | 71       | 211   | 10214 | West Harbour Rd W     | Chestnut St           | 19             | 1  | 20    | 21  | 1  | 22    | 2            | 11%   | 2                       | 10%     | ✓  | ✓     | 0.4              | 0.4   | ✓  | ✓     |
|                                              | 71       | 211   | 10340 | West Harbour Rd W     | West Harbour Rd E     | 40             | 2  | 42    | 41  | 1  | 42    | 1.1          | 3%    | 0                       | 0%      | ✓  | ✓     | 0.2              | 0.0   | ✓  | ✓     |
|                                              | 71       | 211   | 10338 | West Harbour Rd W     | Waterfront Avenue     | 2              | 0  | 2     | 8   | 1  | 9     | 6.1          | 321%  | 7                       | 350%    | ✓  | ✓     | 2.7              | 3.0   | ✓  | ✓     |
|                                              | 71       | 208   | 10340 | Chestnut St           | West Harbour Rd E     | 16             | 1  | 17    | 19  | 6  | 25    | 2.85         | 18%   | 8                       | 47%     | ✓  | ✓     | 0.7              | 1.7   | ✓  | ✓     |
|                                              | 71       | 208   | 10338 | Chestnut St           | Waterfront Avenue     | 29             | 2  | 30    | 32  | 2  | 34    | 3.5          | 12%   | 4                       | 13%     | ✓  | ✓     | 0.6              | 0.7   | ✓  | ✓     |
|                                              | 71       | 208   | 10215 | Chestnut St           | West Harbour Rd W     | 2              | 0  | 2     | 1   | 0  | 1     | -0.9         | -47%  | -1                      | -50%    | ✓  | ✓     | 0.7              | 0.8   | ✓  | ✓     |
|                                              | 71       | 210   | 10338 | West Harbour Rd E     | Waterfront Avenue     | 66             | 3  | 69    | 85  | 9  | 94    | 19.45        | 30%   | 25                      | 36%     | ✓  | ✓     | 2.2              | 2.8   | ✓  | ✓     |
|                                              | 71       | 210   | 10215 | West Harbour Rd E     | West Harbour Rd W     | 34             | 2  | 36    | 42  | 0  | 42    | 7.8          | 23%   | 6                       | 17%     | ✓  | ✓     | 1.3              | 1.0   | ✓  | ✓     |
|                                              | 71       | 210   | 10214 | West Harbour Rd E     | Chestnut St           | 13             | 1  | 14    | 16  | 7  | 23    | 2.7          | 20%   | 9                       | 64%     | ✓  | ✓     | 0.7              | 2.1   | ✓  | ✓     |
|                                              | 71       | 206   | 10215 | Waterfront Avenue     | West Harbour Rd W     | 54             | 3  | 57    | 56  | 1  | 57    | 1.85         | 3%    | 0                       | 0%      | ✓  | ✓     | 0.2              | 0.0   | ✓  | ✓     |
|                                              | 71       | 206   | 10214 | Waterfront Avenue     | Chestnut St           | 49             | 3  | 52    | 44  | 1  | 45    | -5.4         | -11%  | -7                      | -13%    | ✓  | ✓     | 0.8              | 1.0   | ✓  | ✓     |
|                                              | 71       | 206   | 10340 | Waterfront Avenue     | West Harbour Rd E     | 125            | 7  | 132   | 135 | 9  | 144   | 9.6          | 8%    | 12                      | 9%      | ✓  | ✓     | 0.8              | 1.0   | ✓  | ✓     |

Trams to Granton, BioQuarter and Beyond  
Microsimulation Modelling Summary

|  | Movement |      |    |      |    | Observed Count |    |       |    | VISSIM Model |       |    |      | Criteria 1 - Difference |         |     |       | Criteria 2 - GEH |       |     |       |
|--|----------|------|----|------|----|----------------|----|-------|----|--------------|-------|----|------|-------------------------|---------|-----|-------|------------------|-------|-----|-------|
|  | Node     | From | To | From | To | LV             | HV | Total | LV | HV           | Total | LV | LV % | Total                   | Total % | LV  | Total | LV               | Total | LV  | Total |
|  |          |      |    |      |    |                |    |       |    |              |       |    |      |                         |         |     |       |                  |       |     |       |
|  |          |      |    |      |    |                |    |       |    |              |       |    |      |                         |         | 99% | 99%   |                  |       | 98% | 99%   |
|  |          |      |    |      |    |                |    |       |    |              |       |    |      |                         |         | 133 | 133   |                  |       | 131 | 132   |
|  |          |      |    |      |    |                |    |       |    |              |       |    |      |                         |         | 134 | 134   |                  |       | 134 | 134   |



# Trams to Granton, BioQuarter and Beyond

## Microsimulation Modelling Summary

**Table A.2: Orchard Brae Model Calibration PM 17:00-18:00**

|                                                       | Movement |      |     | From                   | To                     | Observed Count |     |       |     | VISSIM Model |       |     |       | Criteria 1 - Difference |         |    |       | Criteria 2 - GEH |       |    |       |
|-------------------------------------------------------|----------|------|-----|------------------------|------------------------|----------------|-----|-------|-----|--------------|-------|-----|-------|-------------------------|---------|----|-------|------------------|-------|----|-------|
|                                                       | Node     | From | To  |                        |                        | LV             | HV  | Total | LV  | HV           | Total | LV  | LV %  | Total                   | Total % | LV | Total | LV               | Total | LV | Total |
| Princes Street / South Charlotte Street               |          |      |     |                        |                        |                |     |       |     |              |       |     |       |                         |         |    |       |                  |       |    |       |
| Site 85                                               | 32       | 123  | 84  | Princes Street E       | South Charlotte Street | 0              | 0   | 0     | 0   | 0            | 0     | 0   | 0%    | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Site 85                                               | 32       | 123  | 79  | Princes Street E       | Princes Street W       | 36             | 122 | 158   | 32  | 128          | 160   | -4  | -11%  | 2                       | 1%      | ✓  | ✓     | 0.7              | 0.2   | ✓  | ✓     |
| Site 85                                               | 32       | 69   | 79  | South Charlotte Street | Princes Street W       | 611            | 14  | 625   | 645 | 11           | 656   | 34  | 6%    | 31                      | 5%      | ✓  | ✓     | 1.4              | 1.2   | ✓  | ✓     |
| Site 85                                               | 32       | 69   | 81  | South Charlotte Street | Princes Street E       | 0              | 0   | 0     | 0   | 0            | 0     | 0   | 0%    | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Site 85                                               | 32       | 78   | 81  | Princes Street W       | Princes Street E       | 54             | 127 | 181   | 40  | 115          | 155   | -14 | -26%  | -26                     | -14%    | ✓  | ✓     | 2.0              | 2.0   | ✓  | ✓     |
| Site 85                                               | 32       | 78   | 84  | Princes Street W       | South Charlotte Street | 579            | 9   | 588   | 545 | 12           | 557   | -34 | -6%   | -31                     | -5%     | ✓  | ✓     | 1.4              | 1.3   | ✓  | ✓     |
| Princes Street / Lothian Road                         |          |      |     |                        |                        |                |     |       |     |              |       |     |       |                         |         |    |       |                  |       |    |       |
| Site 38                                               | 33       | 79   | 82  | Princes Street E       | Lothian Road           | 504            | 54  | 558   | 656 | 58           | 714   | 152 | 30%   | 156                     | 28%     | ✗  | ✗     | 6.3              | 6.2   | ✗  | ✗     |
| Site 38                                               | 33       | 79   | 75  | Princes Street E       | Princes Street W       | 17             | 103 | 120   | 20  | 81           | 101   | 3   | 18%   | -19                     | -16%    | ✓  | ✓     | 0.7              | 1.8   | ✓  | ✓     |
| Site 38                                               | 33       | 92   | 75  | Lothian Road           | Princes Street W       | 0              | 0   | 0     | 0   | 0            | 0     | 0   | 0%    | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Site 38                                               | 33       | 92   | 78  | Lothian Road           | Princes Street E       | 501            | 52  | 553   | 545 | 46           | 591   | 44  | 9%    | 38                      | 7%      | ✓  | ✓     | 1.9              | 1.6   | ✓  | ✓     |
| Site 38                                               | 33       | 77   | 78  | Princes Street W       | Princes Street E       | 52             | 91  | 143   | 40  | 82           | 122   | -12 | -23%  | -21                     | -15%    | ✓  | ✓     | 1.8              | 1.8   | ✓  | ✓     |
| Site 38                                               | 33       | 77   | 82  | Princes Street W       | Lothian Road           | 1              | 0   | 1     | 0   | 0            | 0     | -1  | -100% | -1                      | -100%   | ✓  | ✓     | 1.4              | 1.4   | ✓  | ✓     |
| Princes Street/ Shandwick Pl/ Queensferry Street      |          |      |     |                        |                        |                |     |       |     |              |       |     |       |                         |         |    |       |                  |       |    |       |
| Site 1                                                | 34       | 76   | 5   | Princes Street E       | Queensferry Street     | 6              | 28  | 34    | 6   | 26           | 32    | 0   | 0%    | -2                      | -6%     | ✓  | ✓     | 0.0              | 0.3   | ✓  | ✓     |
| Site 1                                                | 34       | 76   | 74  | Princes Street E       | Shandwick Place        | 26             | 59  | 85    | 14  | 55           | 69    | -12 | -46%  | -16                     | -19%    | ✓  | ✓     | 2.7              | 1.8   | ✓  | ✓     |
| Site 1                                                | 34       | 4    | 74  | Queensferry Street     | Shandwick Place        | 1              | 0   | 1     | 0   | 0            | 0     | -1  | -100% | -1                      | -100%   | ✓  | ✓     | 1.4              | 1.4   | ✓  | ✓     |
| Site 1                                                | 34       | 4    | 77  | Queensferry Street     | Princes Street E       | 5              | 27  | 32    | 5   | 26           | 31    | 0   | 0%    | -1                      | -3%     | ✓  | ✓     | 0.0              | 0.2   | ✓  | ✓     |
| Site 1                                                | 34       | 67   | 77  | Shandwick Place        | Princes Street E       | 66             | 59  | 125   | 36  | 55           | 91    | -30 | -45%  | -34                     | -27%    | ✓  | ✓     | 4.2              | 3.3   | ✓  | ✓     |
| Site 1                                                | 34       | 67   | 5   | Shandwick Place        | Queensferry Street     | 0              | 0   | 0     | 0   | 0            | 0     | 0   | 0%    | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Melville Street                                       |          |      |     |                        |                        |                |     |       |     |              |       |     |       |                         |         |    |       |                  |       |    |       |
| Site 79                                               | 1        | 5    | 3   | Melville St Eastbound  |                        | 163            | 1   | 164   | 80  | 2            | 82    | -83 | -51%  | -82                     | -50%    | ✓  | ✓     | 7.5              | 7.4   | ✗  | ✗     |
| Site 79                                               | 1        | 221  | 2   | Melville St Westbound  |                        | 127            | 2   | 129   | 112 | 1            | 113   | -15 | -12%  | -16                     | -12%    | ✓  | ✓     | 1.4              | 1.5   | ✓  | ✓     |
| Randolph Place / Randolph Crescent / Drumsheugh Place |          |      |     |                        |                        |                |     |       |     |              |       |     |       |                         |         |    |       |                  |       |    |       |
| Site 29                                               | 35       | 2    | 116 | Randolph Place         | Randolph Crescent      | 0              | 0   | 0     | 0   | 0            | 0     | 0   | 0%    | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Site 29                                               | 35       | 2    | 45  | Randolph Place         | Drumsheugh Place       | 146            | 37  | 183   | 165 | 34           | 199   | 19  | 13%   | 16                      | 9%      | ✓  | ✓     | 1.5              | 1.2   | ✓  | ✓     |
| Site 29                                               | 35       | 116  | 45  | Randolph Crescent      | Drumsheugh Place       | 315            | 4   | 319   | 312 | 1            | 313   | -3  | -1%   | -6                      | -2%     | ✓  | ✓     | 0.2              | 0.3   | ✓  | ✓     |
| Site 29                                               | 35       | 116  | 1   | Randolph Crescent      | Randolph Place         | 78             | 1   | 79    | 81  | 2            | 83    | 3   | 4%    | 4                       | 5%      | ✓  | ✓     | 0.3              | 0.4   | ✓  | ✓     |
| Site 29                                               | 35       | 1    | 1   | Drumsheugh Place       | Randolph Place         | 109            | 36  | 145   | 105 | 34           | 139   | -4  | -4%   | -6                      | -4%     | ✓  | ✓     | 0.4              | 0.5   | ✓  | ✓     |
| Site 29                                               | 35       | 1    | 116 | Drumsheugh Place       | Randolph Crescent      | 0              | 0   | 0     | 0   | 0            | 0     | 0   | 0%    | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Drumsheugh Gardens                                    |          |      |     |                        |                        |                |     |       |     |              |       |     |       |                         |         |    |       |                  |       |    |       |
| Site 78                                               | 36       | 31   | 16  | Drums'gh Gdns Wbnd     |                        | 258            | 1   | 259   | 223 | 4            | 227   | -35 | -14%  | -32                     | -12%    | ✓  | ✓     | 2.3              | 2.1   | ✓  | ✓     |
| Site 78                                               | 36       | 45   | 32  | Drums'gh Gdns Wbnd     |                        | 181            | 1   | 182   | 258 | 1            | 259   | 77  | 43%   | 77                      | 42%     | ✓  | ✓     | 5.2              | 5.2   | ✗  | ✗     |
| Drumsheugh Place / Randolph Crescent / Lynedoch Place |          |      |     |                        |                        |                |     |       |     |              |       |     |       |                         |         |    |       |                  |       |    |       |
| Site 30                                               | 7        | 16   | 24  | Drumsheugh Place       | Randolph Crescent      | 206            | 1   | 207   | 185 | 0            | 185   | -21 | -10%  | -22                     | -11%    | ✓  | ✓     | 1.5              | 1.6   | ✓  | ✓     |
| Site 30                                               | 7        | 16   | 15  | Drumsheugh Place       | Lynedoch Place         | 389            | 37  | 426   | 421 | 35           | 456   | 32  | 8%    | 30                      | 7%      | ✓  | ✓     | 1.6              | 1.4   | ✓  | ✓     |

# Trams to Granton, BioQuarter and Beyond

## Microsimulation Modelling Summary

|                                                           | Movement |      |     |                   |                   | Observed Count |    |       |     |    |     | VISSIM Model |      | Criteria 1 - Difference |         |    |       | Criteria 2 - GEH |       |    |       |
|-----------------------------------------------------------|----------|------|-----|-------------------|-------------------|----------------|----|-------|-----|----|-----|--------------|------|-------------------------|---------|----|-------|------------------|-------|----|-------|
|                                                           | Node     | From | To  |                   |                   | LV             | HV | Total |     |    |     | LV           | LV % | Total                   | Total % | LV | Total | LV               | Total | LV | Total |
| Site 30                                                   | 7        | 24   | 15  | Randolph Crescent | Lynedoch Place    | 0              | 0  | 0     | 0   | 0  | 0   | 0            | 0%   | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Site 30                                                   | 7        | 24   | 13  | Randolph Crescent | Drumsheugh Place  | 0              | 0  | 0     | 0   | 0  | 0   | 0            | 0%   | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Site 30                                                   | 7        | 13   | 13  | Lynedoch Place    | Drumsheugh Place  | 253            | 35 | 288   | 270 | 31 | 301 | 17           | 7%   | 13                      | 5%      | ✓  | ✓     | 1.1              | 0.8   | ✓  | ✓     |
| Site 30                                                   | 7        | 13   | 24  | Lynedoch Place    | Randolph Crescent | 214            | 7  | 221   | 242 | 2  | 244 | 28           | 13%  | 23                      | 10%     | ✓  | ✓     | 1.9              | 1.5   | ✓  | ✓     |
| <b>Queensferry Road/ Orchard Brae / Dean Path</b>         |          |      |     |                   |                   |                |    |       |     |    |     |              |      |                         |         |    |       |                  |       |    |       |
| Site 109                                                  | 5        | 18   | 28  | Queensferry Rd E  | Dean Path         | 45             | 0  | 45    | 39  | 0  | 39  | -6           | -13% | -6                      | -13%    | ✓  | ✓     | 0.9              | 0.9   | ✓  | ✓     |
| Site 109                                                  | 5        | 18   | 14  | Queensferry Rd E  | Queensferry Rd W  | 276            | 20 | 296   | 265 | 18 | 283 | -11          | -4%  | -13                     | -4%     | ✓  | ✓     | 0.7              | 0.8   | ✓  | ✓     |
| Site 109                                                  | 5        | 18   | 25  | Queensferry Rd E  | Orchard Brae      | 52             | 12 | 64    | 64  | 15 | 79  | 12           | 23%  | 15                      | 23%     | ✓  | ✓     | 1.6              | 1.8   | ✓  | ✓     |
| Site 109                                                  | 5        | 27   | 14  | Dean Path         | Queensferry Rd W  | 12             | 0  | 12    | 13  | 0  | 13  | 1            | 8%   | 1                       | 8%      | ✓  | ✓     | 0.3              | 0.3   | ✓  | ✓     |
| Site 109                                                  | 5        | 27   | 25  | Dean Path         | Orchard Brae      | 92             | 0  | 92    | 99  | 0  | 99  | 7            | 8%   | 7                       | 8%      | ✓  | ✓     | 0.7              | 0.7   | ✓  | ✓     |
| Site 109                                                  | 5        | 27   | 12  | Dean Path         | Queensferry Rd E  | 49             | 0  | 49    | 47  | 0  | 47  | -2           | -4%  | -2                      | -4%     | ✓  | ✓     | 0.3              | 0.3   | ✓  | ✓     |
| Site 109                                                  | 5        | 153  | 25  | Queensferry Rd W  | Orchard Brae      | 103            | 0  | 103   | 114 | 1  | 115 | 11           | 11%  | 12                      | 12%     | ✓  | ✓     | 1.1              | 1.1   | ✓  | ✓     |
| Site 109                                                  | 5        | 153  | 12  | Queensferry Rd W  | Queensferry Rd E  | 320            | 27 | 347   | 289 | 20 | 309 | -31          | -10% | -38                     | -11%    | ✓  | ✓     | 1.8              | 2.1   | ✓  | ✓     |
| Site 109                                                  | 5        | 153  | 28  | Queensferry Rd W  | Dean Path         | 0              | 0  | 0     | 0   | 0  | 0   | 0            | 0%   | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Site 109                                                  | 5        | 112  | 14  | Orchard Brae      | Queensferry Rd W  | 101            | 4  | 105   | 88  | 0  | 88  | -13          | -13% | -17                     | -16%    | ✓  | ✓     | 1.3              | 1.7   | ✓  | ✓     |
| Site 109                                                  | 5        | 112  | 28  | Orchard Brae      | Dean Path         | 146            | 0  | 146   | 120 | 0  | 120 | -26          | -18% | -26                     | -18%    | ✓  | ✓     | 2.3              | 2.3   | ✓  | ✓     |
| Site 109                                                  | 5        | 112  | 12  | Orchard Brae      | Queensferry Rd E  | 94             | 14 | 108   | 100 | 11 | 111 | 6            | 6%   | 3                       | 3%      | ✓  | ✓     | 0.6              | 0.3   | ✓  | ✓     |
| <b>Comely Bank Road / Orchard Brae / Crewe Road South</b> |          |      |     |                   |                   |                |    |       |     |    |     |              |      |                         |         |    |       |                  |       |    |       |
| Site 63                                                   | 2        | 25   | 134 | Orchard Brae      | Orchard Road      | 4              | 0  | 4     | 7   | 0  | 7   | 3            | 75%  | 3                       | 75%     | ✓  | ✓     | 1.3              | 1.3   | ✓  | ✓     |
| Site 63                                                   | 2        | 25   | 34  | Orchard Brae      | Craigleith Road   | 12             | 0  | 12    | 19  | 0  | 19  | 7            | 58%  | 7                       | 58%     | ✓  | ✓     | 1.8              | 1.8   | ✓  | ✓     |
| Site 63                                                   | 2        | 25   | 38  | Orchard Brae      | Crewe Road South  | 164            | 13 | 177   | 166 | 16 | 182 | 2            | 1%   | 5                       | 3%      | ✓  | ✓     | 0.2              | 0.4   | ✓  | ✓     |
| Site 63                                                   | 2        | 25   | 35  | Orchard Brae      | Comely Bank Road  | 63             | 0  | 63    | 61  | 0  | 61  | -2           | -3%  | -2                      | -3%     | ✓  | ✓     | 0.3              | 0.3   | ✓  | ✓     |
| Site 63                                                   | 2        | 146  | 34  | Orchard Road      | Craigleith Road   | 3              | 0  | 3     | 3   | 0  | 3   | 0            | 0%   | 0                       | 0%      | ✓  | ✓     | 0.0              | 0.0   | ✓  | ✓     |
| Site 63                                                   | 2        | 146  | 38  | Orchard Road      | Crewe Road South  | 105            | 0  | 105   | 102 | 0  | 102 | -3           | -3%  | -3                      | -3%     | ✓  | ✓     | 0.3              | 0.3   | ✓  | ✓     |
| Site 63                                                   | 2        | 146  | 35  | Orchard Road      | Comely Bank Road  | 83             | 0  | 83    | 66  | 0  | 66  | -17          | -20% | -17                     | -20%    | ✓  | ✓     | 2.0              | 2.0   | ✓  | ✓     |
| Site 63                                                   | 2        | 146  | 110 | Orchard Road      | Orchard Brae      | 0              | 0  | 0     | 15  | 0  | 15  | 15           | 0%   | 15                      | 0%      | ✓  | ✓     | 5.5              | 5.5   | ✗  | ✗     |
| Site 63                                                   | 2        | 108  | 38  | Craigleith Road   | Crewe Road South  | 69             | 4  | 73    | 73  | 2  | 75  | 4            | 6%   | 2                       | 3%      | ✓  | ✓     | 0.5              | 0.2   | ✓  | ✓     |
| Site 63                                                   | 2        | 108  | 35  | Craigleith Road   | Comely Bank Road  | 260            | 1  | 261   | 279 | 1  | 280 | 19           | 7%   | 19                      | 7%      | ✓  | ✓     | 1.2              | 1.2   | ✓  | ✓     |
| Site 63                                                   | 2        | 108  | 110 | Craigleith Road   | Orchard Brae      | 4              | 0  | 4     | 8   | 0  | 8   | 4            | 100% | 4                       | 100%    | ✓  | ✓     | 1.6              | 1.6   | ✓  | ✓     |
| Site 63                                                   | 2        | 108  | 134 | Craigleith Road   | Orchard Road      | 5              | 0  | 5     | 8   | 0  | 8   | 3            | 60%  | 3                       | 60%     | ✓  | ✓     | 1.2              | 1.2   | ✓  | ✓     |
| Site 63                                                   | 2        | 212  | 35  | Crewe Road South  | Comely Bank Road  | 70             | 5  | 75    | 62  | 0  | 62  | -8           | -11% | -13                     | -17%    | ✓  | ✓     | 1.0              | 1.6   | ✓  | ✓     |
| Site 63                                                   | 2        | 212  | 110 | Crewe Road South  | Orchard Brae      | 238            | 12 | 250   | 206 | 13 | 219 | -32          | -13% | -31                     | -12%    | ✓  | ✓     | 2.1              | 2.0   | ✓  | ✓     |
| Site 63                                                   | 2        | 212  | 134 | Crewe Road South  | Orchard Road      | 96             | 0  | 96    | 86  | 0  | 86  | -10          | -10% | -10                     | -10%    | ✓  | ✓     | 1.0              | 1.0   | ✓  | ✓     |
| Site 63                                                   | 2        | 212  | 34  | Crewe Road South  | Craigleith Road   | 133            | 2  | 135   | 126 | 0  | 126 | -7           | -5%  | -9                      | -7%     | ✓  | ✓     | 0.6              | 0.8   | ✓  | ✓     |
| Site 63                                                   | 2        | 230  | 110 | Comely Bank Road  | Orchard Brae      | 71             | 1  | 72    | 58  | 0  | 58  | -13          | -18% | -14                     | -19%    | ✓  | ✓     | 1.6              | 1.7   | ✓  | ✓     |
| Site 63                                                   | 2        | 230  | 134 | Comely Bank Road  | Orchard Road      | 62             | 0  | 62    | 46  | 0  | 46  | -16          | -26% | -16                     | -26%    | ✓  | ✓     | 2.2              | 2.2   | ✓  | ✓     |
| Site 63                                                   | 2        | 230  | 34  | Comely Bank Road  | Craigleith Road   | 249            | 1  | 250   | 241 | 3  | 244 | -8           | -3%  | -6                      | -2%     | ✓  | ✓     | 0.5              | 0.4   | ✓  | ✓     |
| Site 63                                                   | 2        | 230  | 38  | Comely Bank Road  | Crewe Road South  | 73             | 5  | 78    | 68  | 1  | 69  | -5           | -7%  | -9                      | -12%    | ✓  | ✓     | 0.6              | 1.0   | ✓  | ✓     |

# Trams to Granton, BioQuarter and Beyond

## Microsimulation Modelling Summary

|                                                         | Movement |       |       | From                  | To                    | Observed Count |    |       |     | VISSIM Model |       |        |      | Criteria 1 - Difference |         |    |       | Criteria 2 - GEH |       |    |       |
|---------------------------------------------------------|----------|-------|-------|-----------------------|-----------------------|----------------|----|-------|-----|--------------|-------|--------|------|-------------------------|---------|----|-------|------------------|-------|----|-------|
|                                                         | Node     | From  | To    |                       |                       | LV             | HV | Total | LV  | HV           | Total | LV     | LV % | Total                   | Total % | LV | Total | LV               | Total | LV | Total |
| Crewe Toll - Crewe Road South / Ferry Road Telford Road |          |       |       |                       |                       |                |    |       |     |              |       |        |      |                         |         |    |       |                  |       |    |       |
| Site 64                                                 | 8        | 56    | 55    | Crewe Road South      | Telford Road          | 78             | 2  | 80    | 81  | 0            | 81    | 3      | 4%   | 1                       | 1%      | ✓  | ✓     | 0.3              | 0.1   | ✓  | ✓     |
| Site 64                                                 | 8        | 56    | 53    | Crewe Road South      | Ferry Road W          | 177            | 11 | 188   | 172 | 12           | 184   | -5     | -3%  | -4                      | -2%     | ✓  | ✓     | 0.4              | 0.3   | ✓  | ✓     |
| Site 64                                                 | 8        | 56    | 50    | Crewe Road South      | Crewe Road North      | 160            | 10 | 170   | 156 | 1            | 157   | -4     | -3%  | -13                     | -8%     | ✓  | ✓     | 0.3              | 1.0   | ✓  | ✓     |
| Site 64                                                 | 8        | 56    | 46    | Crewe Road South      | Ferry Road E          | 84             | 0  | 84    | 79  | 0            | 79    | -5     | -6%  | -5                      | -6%     | ✓  | ✓     | 0.6              | 0.6   | ✓  | ✓     |
| Site 64                                                 | 8        | 99    | 53    | Telford Road          | Ferry Road W          | 53             | 0  | 53    | 59  | 0            | 59    | 6      | 11%  | 6                       | 11%     | ✓  | ✓     | 0.8              | 0.8   | ✓  | ✓     |
| Site 64                                                 | 8        | 99    | 50    | Telford Road          | Crewe Road North      | 177            | 2  | 179   | 181 | 1            | 182   | 4      | 2%   | 3                       | 2%      | ✓  | ✓     | 0.3              | 0.2   | ✓  | ✓     |
| Site 64                                                 | 8        | 99    | 46    | Telford Road          | Ferry Road E          | 365            | 5  | 370   | 381 | 4            | 385   | 16     | 4%   | 15                      | 4%      | ✓  | ✓     | 0.8              | 0.8   | ✓  | ✓     |
| Site 64                                                 | 8        | 99    | 60    | Telford Road          | Crewe Road South      | 43             | 2  | 45    | 42  | 0            | 42    | -1     | -2%  | -3                      | -7%     | ✓  | ✓     | 0.2              | 0.5   | ✓  | ✓     |
| Site 64                                                 | 8        | 23    | 50    | Ferry Road W          | Crewe Road North      | 71             | 0  | 71    | 69  | 2            | 71    | -2     | -3%  | 0                       | 0%      | ✓  | ✓     | 0.2              | 0.0   | ✓  | ✓     |
| Site 64                                                 | 8        | 23    | 46    | Ferry Road W          | Ferry Road E          | 179            | 7  | 186   | 188 | 1            | 189   | 9      | 5%   | 3                       | 2%      | ✓  | ✓     | 0.7              | 0.2   | ✓  | ✓     |
| Site 64                                                 | 8        | 23    | 60    | Ferry Road W          | Crewe Road South      | 152            | 5  | 157   | 154 | 7            | 161   | 2      | 1%   | 4                       | 3%      | ✓  | ✓     | 0.2              | 0.3   | ✓  | ✓     |
| Site 64                                                 | 8        | 23    | 55    | Ferry Road W          | Telford Road          | 80             | 1  | 81    | 79  | 0            | 79    | -1     | -1%  | -2                      | -2%     | ✓  | ✓     | 0.1              | 0.2   | ✓  | ✓     |
| Site 64                                                 | 8        | 61    | 46    | Crewe Road North      | Ferry Road E          | 68             | 1  | 69    | 67  | 3            | 70    | -1     | -1%  | 1                       | 1%      | ✓  | ✓     | 0.1              | 0.1   | ✓  | ✓     |
| Site 64                                                 | 8        | 61    | 60    | Crewe Road North      | Crewe Road South      | 153            | 10 | 163   | 141 | 0            | 141   | -12    | -8%  | -22                     | -13%    | ✓  | ✓     | 1.0              | 1.8   | ✓  | ✓     |
| Site 64                                                 | 8        | 61    | 55    | Crewe Road North      | Telford Road          | 223            | 3  | 226   | 215 | 0            | 215   | -8     | -4%  | -11                     | -5%     | ✓  | ✓     | 0.5              | 0.7   | ✓  | ✓     |
| Site 64                                                 | 8        | 61    | 53    | Crewe Road North      | Ferry Road W          | 42             | 0  | 42    | 55  | 0            | 55    | 13     | 31%  | 13                      | 31%     | ✓  | ✓     | 1.9              | 1.9   | ✓  | ✓     |
| Site 64                                                 | 8        | 48    | 60    | Ferry Road E          | Crewe Road South      | 89             | 1  | 90    | 88  | 0            | 88    | -1     | -1%  | -2                      | -2%     | ✓  | ✓     | 0.1              | 0.2   | ✓  | ✓     |
| Site 64                                                 | 8        | 48    | 55    | Ferry Road E          | Telford Road          | 431            | 0  | 431   | 426 | 5            | 431   | -5     | -1%  | 0                       | 0%      | ✓  | ✓     | 0.2              | 0.0   | ✓  | ✓     |
| Site 64                                                 | 8        | 48    | 53    | Ferry Road E          | Ferry Road W          | 211            | 7  | 218   | 242 | 0            | 242   | 31     | 15%  | 24                      | 11%     | ✓  | ✓     | 2.1              | 1.6   | ✓  | ✓     |
| Site 64                                                 | 8        | 48    | 50    | Ferry Road E          | Crewe Road North      | 92             | 0  | 92    | 92  | 4            | 96    | 0      | 0%   | 4                       | 4%      | ✓  | ✓     | 0.0              | 0.4   | ✓  | ✓     |
| West Granton Road / West Granton Access                 |          |       |       |                       |                       |                |    |       |     |              |       |        |      |                         |         |    |       |                  |       |    |       |
|                                                         | 69       | 10066 | 10071 | West Granton Rd W     | Waterfront Broadway   | 62             | 3  | 65    | 67  | 0            | 67    | 5.25   | 9%   | 2                       | 3%      | ✓  | ✓     | 0.7              | 0.2   | ✓  | ✓     |
|                                                         | 69       | 10066 | 10072 | West Granton Rd W     | West Granton Rd E     | 385            | 20 | 405   | 424 | 1            | 425   | 39.25  | 10%  | 20                      | 5%      | ✓  | ✓     | 2.0              | 1.0   | ✓  | ✓     |
|                                                         | 69       | 10066 | 10070 | West Granton Rd W     | West Granton Access   | 37             | 2  | 39    | 36  | 0            | 36    | -1.05  | -3%  | -3                      | -8%     | ✓  | ✓     | 0.2              | 0.5   | ✓  | ✓     |
|                                                         | 69       | 10068 | 10072 | Waterfront Broadway   | West Granton Rd E     | 74             | 4  | 78    | 77  | 0            | 77    | 2.9    | 4%   | -1                      | -1%     | ✓  | ✓     | 0.3              | 0.1   | ✓  | ✓     |
|                                                         | 69       | 10068 | 10070 | Waterfront Broadway   | West Granton Access   | 157            | 8  | 165   | 165 | 3            | 168   | 8.25   | 5%   | 3                       | 2%      | ✓  | ✓     | 0.7              | 0.2   | ✓  | ✓     |
|                                                         | 69       | 10068 | 10069 | Waterfront Broadway   | West Granton Rd W     | 103            | 5  | 108   | 96  | 0            | 96    | -6.6   | -6%  | -12                     | -11%    | ✓  | ✓     | 0.7              | 1.2   | ✓  | ✓     |
|                                                         | 69       | 10067 | 10070 | West Granton Rd E     | West Granton Access   | 276            | 15 | 291   | 266 | 2            | 268   | -10.45 | -4%  | -23                     | -8%     | ✓  | ✓     | 0.6              | 1.4   | ✓  | ✓     |
|                                                         | 69       | 10067 | 10069 | West Granton Rd E     | West Granton Rd W     | 368            | 19 | 387   | 379 | 0            | 379   | 11.35  | 3%   | -8                      | -2%     | ✓  | ✓     | 0.6              | 0.4   | ✓  | ✓     |
|                                                         | 69       | 10067 | 10071 | West Granton Rd E     | Waterfront Broadway   | 60             | 3  | 63    | 59  | 0            | 59    | -0.85  | -1%  | -4                      | -6%     | ✓  | ✓     | 0.1              | 0.5   | ✓  | ✓     |
|                                                         | 69       | 10065 | 10069 | West Granton Access   | West Granton Rd W     | 62             | 3  | 65    | 61  | 0            | 61    | -0.75  | -1%  | -4                      | -6%     | ✓  | ✓     | 0.1              | 0.5   | ✓  | ✓     |
|                                                         | 69       | 10065 | 10071 | West Granton Access   | Waterfront Broadway   | 182            | 10 | 192   | 186 | 3            | 189   | 3.6    | 2%   | -3                      | -2%     | ✓  | ✓     | 0.3              | 0.2   | ✓  | ✓     |
|                                                         | 69       | 10065 | 10072 | West Granton Access   | West Granton Rd E     | 185            | 10 | 195   | 171 | 3            | 174   | -14.25 | -8%  | -21                     | -11%    | ✓  | ✓     | 1.1              | 1.5   | ✓  | ✓     |
| Waterfront Broadway / Morrisons                         |          |       |       |                       |                       |                |    |       |     |              |       |        |      |                         |         |    |       |                  |       |    |       |
|                                                         | 75       | 10068 | 10068 | Waterfront Broadway N | Waterfront Broadway S | 185            | 10 | 195   | 205 | 3            | 208   | 19.75  | 11%  | 13                      | 7%      | ✓  | ✓     | 1.4              | 0.9   | ✓  | ✓     |
|                                                         | 75       | 10068 | 236   | Waterfront Broadway N | Morrisons             | 46             | 2  | 48    | 45  | 0            | 45    | -0.6   | -1%  | -3                      | -6%     | ✓  | ✓     | 0.1              | 0.4   | ✓  | ✓     |
|                                                         | 75       | 10074 | 236   | Waterfront Broadway S | Morrisons             | 99             | 5  | 104   | 104 | 0            | 104   | 5.2    | 5%   | 0                       | 0%      | ✓  | ✓     | 0.5              | 0.0   | ✓  | ✓     |

# Trams to Granton, BioQuarter and Beyond

## Microsimulation Modelling Summary

|                                              | Movement |       |       |                       |                       | Observed Count |    |       |     |    |       | VISSIM Model |       | Criteria 1 - Difference |         |     |       | Criteria 2 - GEH |       |     |       |
|----------------------------------------------|----------|-------|-------|-----------------------|-----------------------|----------------|----|-------|-----|----|-------|--------------|-------|-------------------------|---------|-----|-------|------------------|-------|-----|-------|
|                                              | Node     | From  | To    |                       |                       | LV             | HV | Total | LV  | HV | Total | LV           | LV %  | Total                   | Total % | LV  | Total | LV               | Total | LV  | Total |
|                                              | 75       | 10074 | 10074 | Waterfront Broadway S | Waterfront Broadway N | 180            | 9  | 189   | 209 | 3  | 212   | 29.45        | 16%   | 23                      | 12%     | ✓   | ✓     | 2.1              | 1.6   | ✓   | ✓     |
|                                              | 75       | 238   | 10074 | Morrisons             | Waterfront Broadway N | 36             | 2  | 38    | 39  | 0  | 39    | 2.9          | 8%    | 1                       | 3%      | ✓   | ✓     | 0.5              | 0.2   | ✓   | ✓     |
|                                              | 75       | 238   | 10068 | Morrisons             | Waterfront Broadway S | 121            | 6  | 127   | 132 | 0  | 132   | 11.35        | 9%    | 5                       | 4%      | ✓   | ✓     | 1.0              | 0.4   | ✓   | ✓     |
| <b>Waterfront Avenue / Waterfront Park</b>   |          |       |       |                       |                       |                |    |       |     |    |       |              |       |                         |         |     |       |                  |       |     |       |
|                                              | 70       | 193   | 196   | Waterfront Broadway N | Waterfront Avenue     | 7              | 0  | 7     | 10  | 0  | 10    | 3.35         | 50%   | 3                       | 43%     | ✓   | ✓     | 1.2              | 1.0   | ✓   | ✓     |
|                                              | 70       | 193   | 10304 | Waterfront Broadway N | Waterfront Broadway S | 29             | 2  | 30    | 33  | 0  | 33    | 4.5          | 16%   | 3                       | 10%     | ✓   | ✓     | 0.8              | 0.5   | ✓   | ✓     |
|                                              | 70       | 193   | 198   | Waterfront Broadway N | Waterfront Park       | 3              | 0  | 3     | 3   | 0  | 3     | 0.15         | 5%    | 0                       | 0%      | ✓   | ✓     | 0.1              | 0.0   | ✓   | ✓     |
|                                              | 70       | 192   | 10304 | Waterfront Avenue     | Waterfront Broadway S | 141            | 7  | 148   | 150 | 3  | 153   | 9.4          | 7%    | 5                       | 3%      | ✓   | ✓     | 0.8              | 0.4   | ✓   | ✓     |
|                                              | 70       | 192   | 198   | Waterfront Avenue     | Waterfront Park       | 37             | 2  | 39    | 38  | 0  | 38    | 0.95         | 3%    | -1                      | -3%     | ✓   | ✓     | 0.2              | 0.2   | ✓   | ✓     |
|                                              | 70       | 192   | 199   | Waterfront Avenue     | Waterfront Broadway N | 1              | 0  | 1     | 2   | 0  | 2     | 1.05         | 111%  | 1                       | 100%    | ✓   | ✓     | 0.9              | 0.8   | ✓   | ✓     |
|                                              | 70       | 191   | 198   | Waterfront Broadway S | Waterfront Park       | 18             | 1  | 19    | 22  | 0  | 22    | 3.95         | 22%   | 3                       | 16%     | ✓   | ✓     | 0.9              | 0.7   | ✓   | ✓     |
|                                              | 70       | 191   | 199   | Waterfront Broadway S | Waterfront Broadway N | 11             | 1  | 12    | 15  | 0  | 15    | 3.6          | 32%   | 3                       | 25%     | ✓   | ✓     | 1.0              | 0.8   | ✓   | ✓     |
|                                              | 70       | 191   | 196   | Waterfront Broadway S | Waterfront Avenue     | 188            | 10 | 198   | 210 | 3  | 213   | 21.9         | 12%   | 15                      | 8%      | ✓   | ✓     | 1.6              | 1.0   | ✓   | ✓     |
|                                              | 70       | 194   | 199   | Waterfront Park       | Waterfront Broadway N | 24             | 1  | 25    | 8   | 0  | 8     | -15.75       | -66%  | -17                     | -68%    | ✓   | ✓     | 4.0              | 4.2   | ✓   | ✓     |
|                                              | 70       | 194   | 196   | Waterfront Park       | Waterfront Avenue     | 38             | 2  | 40    | 41  | 0  | 41    | 3            | 8%    | 1                       | 3%      | ✓   | ✓     | 0.5              | 0.2   | ✓   | ✓     |
|                                              | 70       | 194   | 10304 | Waterfront Park       | Waterfront Broadway S | 60             | 3  | 63    | 66  | 0  | 66    | 6.15         | 10%   | 3                       | 5%      | ✓   | ✓     | 0.8              | 0.4   | ✓   | ✓     |
| <b>Waterfront Avenue / Saltire Street</b>    |          |       |       |                       |                       |                |    |       |     |    |       |              |       |                         |         |     |       |                  |       |     |       |
|                                              | 72       | 10388 | 10194 | Saltire Street        | Waterfront Avenue E   | 5              | 0  | 5     | 2   | 1  | 3     | -2.75        | -58%  | -2                      | -40%    | ✓   | ✓     | 1.5              | 1.0   | ✓   | ✓     |
|                                              | 72       | 10388 | 10329 | Saltire Street        | Waterfront Avenue W   | 7              | 0  | 7     | 5   | 0  | 5     | -1.65        | -25%  | -2                      | -29%    | ✓   | ✓     | 0.7              | 0.8   | ✓   | ✓     |
|                                              | 72       | 10329 | 10329 | Waterfront Avenue E   | Waterfront Avenue W   | 165            | 9  | 174   | 186 | 3  | 189   | 20.7         | 13%   | 15                      | 9%      | ✓   | ✓     | 1.6              | 1.1   | ✓   | ✓     |
|                                              | 72       | 10329 | 10227 | Waterfront Avenue E   | Saltire Street        | 6              | 0  | 6     | 0   | 0  | 0     | -5.7         | -100% | -6                      | -100%   | ✓   | ✓     | 3.4              | 3.5   | ✓   | ✓     |
|                                              | 72       | 10194 | 10227 | Waterfront Avenue W   | Saltire Street        | 11             | 1  | 12    | 7   | 0  | 7     | -4.4         | -39%  | -5                      | -42%    | ✓   | ✓     | 1.5              | 1.6   | ✓   | ✓     |
|                                              | 72       | 10194 | 10194 | Waterfront Avenue W   | Waterfront Avenue E   | 221            | 12 | 233   | 243 | 3  | 246   | 21.65        | 10%   | 13                      | 6%      | ✓   | ✓     | 1.4              | 0.8   | ✓   | ✓     |
| <b>Waterfront Avenue / West Harbour Road</b> |          |       |       |                       |                       |                |    |       |     |    |       |              |       |                         |         |     |       |                  |       |     |       |
|                                              | 71       | 211   | 10214 | West Harbour Rd W     | Chestnut St           | 0              | 0  | 0     | 1   | 0  | 1     | 1            | 0%    | 1                       | 0%      | ✓   | ✓     | 1.4              | 1.4   | ✓   | ✓     |
|                                              | 71       | 211   | 10340 | West Harbour Rd W     | West Harbour Rd E     | 34             | 2  | 36    | 45  | 0  | 45    | 10.8         | 32%   | 9                       | 25%     | ✓   | ✓     | 1.7              | 1.4   | ✓   | ✓     |
|                                              | 71       | 211   | 10338 | West Harbour Rd W     | Waterfront Avenue     | 27             | 1  | 28    | 27  | 0  | 27    | 0.4          | 2%    | -1                      | -4%     | ✓   | ✓     | 0.1              | 0.2   | ✓   | ✓     |
|                                              | 71       | 208   | 10340 | Chestnut St           | West Harbour Rd E     | 10             | 1  | 11    | 14  | 0  | 14    | 3.55         | 34%   | 3                       | 27%     | ✓   | ✓     | 1.0              | 0.8   | ✓   | ✓     |
|                                              | 71       | 208   | 10338 | Chestnut St           | Waterfront Avenue     | 38             | 2  | 40    | 44  | 0  | 44    | 6            | 16%   | 4                       | 10%     | ✓   | ✓     | 0.9              | 0.6   | ✓   | ✓     |
|                                              | 71       | 208   | 10215 | Chestnut St           | West Harbour Rd W     | 1              | 0  | 1     | 0   | 0  | 0     | -0.95        | -100% | -1                      | -100%   | ✓   | ✓     | 1.4              | 1.4   | ✓   | ✓     |
|                                              | 71       | 210   | 10338 | West Harbour Rd E     | Waterfront Avenue     | 92             | 5  | 97    | 106 | 4  | 110   | 13.85        | 15%   | 13                      | 13%     | ✓   | ✓     | 1.4              | 1.3   | ✓   | ✓     |
|                                              | 71       | 210   | 10215 | West Harbour Rd E     | West Harbour Rd W     | 18             | 1  | 19    | 23  | 2  | 25    | 4.95         | 27%   | 6                       | 32%     | ✓   | ✓     | 1.1              | 1.3   | ✓   | ✓     |
|                                              | 71       | 210   | 10214 | West Harbour Rd E     | Chestnut St           | 19             | 1  | 20    | 23  | 2  | 25    | 4            | 21%   | 5                       | 25%     | ✓   | ✓     | 0.9              | 1.1   | ✓   | ✓     |
|                                              | 71       | 206   | 10215 | Waterfront Avenue     | West Harbour Rd W     | 13             | 1  | 14    | 11  | 0  | 11    | -2.3         | -17%  | -3                      | -21%    | ✓   | ✓     | 0.7              | 0.8   | ✓   | ✓     |
|                                              | 71       | 206   | 10214 | Waterfront Avenue     | Chestnut St           | 44             | 2  | 46    | 46  | 0  | 46    | 2.3          | 5%    | 0                       | 0%      | ✓   | ✓     | 0.3              | 0.0   | ✓   | ✓     |
|                                              | 71       | 206   | 10340 | Waterfront Avenue     | West Harbour Rd E     | 147            | 8  | 155   | 184 | 4  | 188   | 36.75        | 25%   | 33                      | 21%     | ✓   | ✓     | 2.9              | 2.5   | ✓   | ✓     |
|                                              |          |       |       |                       |                       |                |    |       |     |    |       |              |       |                         |         | 99% | 99%   |                  |       | 97% | 97%   |



Trams to Granton, BioQuarter and Beyond  
Microsimulation Modelling Summary

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|  | Movement |      |    |      |    | Observed Count |    |       |    | VISSIM Model |       |    |      | Criteria 1 - Difference |         |     |       | Criteria 2 - GEH |       |     |       |
|--|----------|------|----|------|----|----------------|----|-------|----|--------------|-------|----|------|-------------------------|---------|-----|-------|------------------|-------|-----|-------|
|  | Node     | From | To | From | To | LV             | HV | Total | LV | HV           | Total | LV | LV % | Total                   | Total % | LV  | Total | LV               | Total | LV  | Total |
|  |          |      |    |      |    |                |    |       |    |              |       |    |      |                         |         | 133 | 133   |                  |       | 130 | 130   |
|  |          |      |    |      |    |                |    |       |    |              |       |    |      |                         |         | 134 | 134   |                  |       | 134 | 134   |

# Appendix B. South East Model Calibration

# Trams to Granton, BioQuarter and Beyond Microsimulation Modelling Summary

**Table B.1: A7 / A701 Model Calibration AM 08:00-09:00**

|                                                                                               |       |       |       |                |                | Observed |    |       | Modelled |    |       | Difference / % Difference |       |       |         |    |       | GEH |       |    |       |
|-----------------------------------------------------------------------------------------------|-------|-------|-------|----------------|----------------|----------|----|-------|----------|----|-------|---------------------------|-------|-------|---------|----|-------|-----|-------|----|-------|
|                                                                                               | Node  | From  | To    | From           | To             | LV       | HV | Total | LV       | HV | Total | LV                        | LV %  | Total | Total % | LV | Total | LV  | Total | LV | Total |
| York PI (W) / Elder St / York PI (E) (Site 1 - Grontmij)                                      |       |       |       |                |                |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |
|                                                                                               | 1042  | 30269 | 30198 | York PI (W)    | Elder St       | 91       | 2  | 93    | 45       | 5  | 50    | -46                       | -57%  | -43   | -46%    | ✓  | ✓     | 5.4 | 5.1   | ✗  | ✗     |
|                                                                                               | 1042  | 30269 | 30493 | York PI (W)    | York PI (E)    | 485      | 25 | 510   | 515      | 26 | 541   | 30                        | 7%    | 31    | 6%      | ✓  | ✓     | 0.5 | 1.4   | ✓  | ✓     |
|                                                                                               | 1042  | 30197 | 30157 | York PI (E)    | York PI (W)    | 413      | 26 | 439   | 409      | 24 | 433   | -4                        | -1%   | -6    | -1%     | ✓  | ✓     | 1.0 | 0.3   | ✓  | ✓     |
|                                                                                               | 1042  | 30197 | 30198 | York PI (E)    | Elder St       | 70       | 4  | 74    | 25       | 0  | 25    | -45                       | -69%  | -49   | -66%    | ✓  | ✓     | 6.5 | 7.0   | ✗  | ✗     |
| Broughton St (N) / York PI / Cathedral Ln / Broughton St (E) / Picardy PI (Site 4 - Grontmij) |       |       |       |                |                |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |
|                                                                                               | 1043  | 30053 | 30052 | York PI        | Broughton St   | 58       | 1  | 59    | 0        | 0  | 0     |                           |       |       |         |    |       |     |       |    |       |
|                                                                                               | 1043  | 30053 | 90055 | York PI        | Picardy PI     | 414      | 19 | 433   | 504      | 28 | 532   | 90                        | 26%   | 99    | 23%     | ✓  | ✓     | 3.6 | 4.5   | ✓  | ✓     |
|                                                                                               | 1043  | 30494 | 90055 | Broughton St   | Picardy PI     | 585      | 21 | 606   | 546      | 10 | 556   | -39                       | -7%   | -50   | -8%     | ✓  | ✓     | 1.3 | 2.1   | ✓  | ✓     |
|                                                                                               | 1043  | 20911 | 30052 | Picardy PI     | Broughton St   | 410      | 10 | 420   | 415      | 12 | 427   | 5                         | 1%    | 7     | 2%      | ✓  | ✓     | 0.2 | 0.3   | ✓  | ✓     |
|                                                                                               | 1043  | 20911 | 644   | Picardy PI     | York PI        | 483      | 31 | 514   | 433      | 24 | 457   | -50                       | -12%  | -57   | -11%    | ✓  | ✓     | 3.1 | 2.6   | ✓  | ✓     |
| Leith Walk / Broughton St / Leith St (Site 5 - Grontmij)                                      |       |       |       |                |                |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |
|                                                                                               | 2     | 90055 | 30056 | Picardy PI     | Leith Walk     | 829      | 40 | 869   | 846      | 33 | 879   | 17                        | 2%    | 10    | 1%      | ✓  | ✓     | 0.7 | 0.3   | ✓  | ✓     |
|                                                                                               | 2     | 90055 | 11295 | Picardy PI     | Leith St       | 466      | 15 | 481   | 392      | 10 | 402   | -74                       | -18%  | -79   | -16%    | ✓  | ✓     | 3.6 | 3.8   | ✓  | ✓     |
|                                                                                               | 2     | 30058 | 20912 | Leith Walk     | Picardy        | 591      | 23 | 614   | 677      | 23 | 700   | 86                        | 17%   | 86    | 14%     | ✓  | ✓     | 2.5 | 3.4   | ✓  | ✓     |
|                                                                                               | 2     | 30058 | 11295 | Leith Walk     | Leith St       | 257      | 17 | 274   | 220      | 10 | 230   | -37                       | -17%  | -44   | -16%    | ✓  | ✓     | 1.3 | 2.8   | ✓  | ✓     |
|                                                                                               | 1     | 39863 | 20911 | Leith St       | Picardy        | 247      | 11 | 258   | 141      | 9  | 150   | -106                      | -52%  | -108  | -42%    | ✗  | ✗     | 7.0 | 7.6   | ✗  | ✗     |
|                                                                                               | 1     | 39863 | 20916 | Leith St       | Leith Walk     | 245      | 16 | 261   | 202      | 8  | 210   | -43                       | -21%  | -51   | -20%    | ✓  | ✓     | 1.9 | 3.3   | ✓  | ✓     |
| Leith Walk / London Rd (Site 7 - Grontmij)                                                    |       |       |       |                |                |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |
|                                                                                               | 3     | 90060 | 90084 | Leith Walk (S) | London Rd      | 406      | 20 | 426   | 425      | 17 | 442   | 19                        | 5%    | 16    | 4%      | ✓  | ✓     | 0.4 | 0.8   | ✓  | ✓     |
|                                                                                               | 3     | 90060 | 90063 | Leith Walk (S) | Leith Walk (N) | 413      | 18 | 431   | 421      | 16 | 437   | 8                         | 2%    | 6     | 1%      | ✓  | ✓     | 1.1 | 0.3   | ✓  | ✓     |
|                                                                                               | 3     | 90060 | 90058 | Leith Walk (S) | Leith Walk (S) | 10       | 2  | 12    | 0        | 0  | 0     | -10                       | -111% | -12   | -100%   | ✓  | ✓     | 4.2 | 4.9   | ✓  | ✓     |
|                                                                                               | 3     | 99988 | 90063 | London Rd      | Leith Walk (N) | 253      | 4  | 257   | 348      | 10 | 358   | 95                        | 43%   | 101   | 39%     | ✓  | ✗     | 5.3 | 5.8   | ✗  | ✗     |
|                                                                                               | 3     | 99988 | 90058 | London Rd      | Leith Walk (S) | 537      | 16 | 553   | 491      | 12 | 503   | -46                       | -10%  | -50   | -9%     | ✓  | ✓     | 3.1 | 2.2   | ✓  | ✓     |
|                                                                                               | 3     | 99988 | 90084 | London Rd      | London Rd      | 2        | 0  | 2     | 0        | 0  | 0     | -2                        | -100% | -2    | -100%   | ✓  | ✓     | 2.0 | 2.0   | ✓  | ✓     |
|                                                                                               | 3     | 90085 | 90058 | Leith Walk (N) | Leith Walk (S) | 423      | 23 | 446   | 416      | 22 | 438   | -7                        | -2%   | -8    | -2%     | ✓  | ✓     | 0.1 | 0.4   | ✓  | ✓     |
|                                                                                               | 3     | 90085 | 90084 | Leith Walk (N) | London Rd      | 72       | 2  | 74    | 61       | 4  | 65    | -11                       | -17%  | -9    | -12%    | ✓  | ✓     | 1.7 | 1.1   | ✓  | ✓     |
|                                                                                               | 3     | 90085 | 90063 | Leith Walk (N) | Leith Walk (N) | 3        | 0  | 3     | 0        | 0  | 0     | -3                        | -100% | -3    | -100%   | ✓  | ✓     | 2.4 | 2.4   | ✓  | ✓     |
| Leith Walk (N) / Annandale St / Leith Walk (S) / Montgomery St (Site 8 - Grontmij)            |       |       |       |                |                |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |
|                                                                                               | 11056 | 90101 | 90093 | Leith Walk (N) | Annandale St   | 50       | 4  | 54    | 49       | 0  | 49    | -1                        | -2%   | -5    | -9%     | ✓  | ✓     | 0.2 | 0.7   | ✓  | ✓     |
|                                                                                               | 11056 | 90101 | 90125 | Leith Walk (N) | Leith Walk (S) | 400      | 24 | 424   | 403      | 22 | 425   | 3                         | 1%    | 1     | 0%      | ✓  | ✓     | 0.0 | 0.0   | ✓  | ✓     |
|                                                                                               | 11056 | 90101 | 90096 | Leith Walk (N) | Montgomery St  | 11       | 1  | 12    | 0        | 0  | 0     | -11                       | -122% | -12   | -100%   | ✓  | ✓     | 4.2 | 4.9   | ✓  | ✓     |
|                                                                                               | 11056 | 90094 | 90125 | Annandale St   | Leith Walk (S) | 64       | 1  | 65    | 43       | 1  | 44    | -21                       | -40%  | -21   | -32%    | ✓  | ✓     | 2.2 | 2.8   | ✓  | ✓     |

# Trams to Granton, BioQuarter and Beyond Microsimulation Modelling Summary

|                                                                                           |       |       |       |                 |                 | Observed |    |       | Modelled |    |       | Difference / % Difference |       |       |         |    |       | GEH  |       |    |       |
|-------------------------------------------------------------------------------------------|-------|-------|-------|-----------------|-----------------|----------|----|-------|----------|----|-------|---------------------------|-------|-------|---------|----|-------|------|-------|----|-------|
|                                                                                           | Node  | From  | To    | From            | To              | LV       | HV | Total | LV       | HV | Total | LV                        | LV %  | Total | Total % | LV | Total | LV   | Total | LV | Total |
|                                                                                           | 11056 | 90094 | 90096 | Annandale St    | Montgomery St   | 120      | 2  | 122   | 121      | 4  | 125   | 1                         | 1%    | 3     | 2%      | ✓  | ✓     | 0.2  | 0.3   | ✓  | ✓     |
|                                                                                           | 11056 | 90094 | 90002 | Annandale St    | Leith Walk (N)  | 107      | 0  | 107   | 102      | 1  | 103   | -5                        | -6%   | -4    | -4%     | ✓  | ✓     | 0.2  | 0.4   | ✓  | ✓     |
|                                                                                           | 11056 | 90091 | 90096 | Leith Walk (S)  | Montgomery St   | 4        | 2  | 6     | 0        | 0  | 0     | -4                        | -133% | -6    | -100%   | ✓  | ✓     | 2.4  | 3.5   | ✓  | ✓     |
|                                                                                           | 11056 | 90091 | 90002 | Leith Walk (S)  | Leith Walk (N)  | 433      | 16 | 449   | 508      | 20 | 528   | 75                        | 20%   | 79    | 18%     | ✓  | ✓     | 3.9  | 3.6   | ✓  | ✓     |
|                                                                                           | 11056 | 90091 | 90093 | Leith Walk (S)  | Annandale St    | 258      | 6  | 264   | 246      | 6  | 252   | -12                       | -5%   | -12   | -5%     | ✓  | ✓     | 1.1  | 0.7   | ✓  | ✓     |
|                                                                                           | 11056 | 90123 | 90002 | Montgomery St   | Leith Walk (N)  | 2        | 0  | 2     | 0        | 2  | 2     | -2                        | -200% | 0     | 0%      | ✓  | ✓     | 1.4  | 0.0   | ✓  | ✓     |
|                                                                                           | 11056 | 90123 | 90093 | Montgomery St   | Annandale St    | 141      | 0  | 141   | 148      | 4  | 152   | 7                         | 5%    | 11    | 8%      | ✓  | ✓     | 0.2  | 0.9   | ✓  | ✓     |
|                                                                                           | 11056 | 90123 | 90125 | Montgomery St   | Leith Walk (S)  | 28       | 0  | 28    | 40       | 2  | 42    | 12                        | 50%   | 14    | 50%     | ✓  | ✓     | 1.9  | 2.4   | ✓  | ✓     |
| <b>Leith St (N) / Leith St (S) / Greenside Row (Site 9 - Grontmij)</b>                    |       |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                                           | 1045  | 40404 | 30042 | Leith St (N)    | Leith St (S)    | 603      | 31 | 634   | 578      | 19 | 597   | -25                       | -5%   | -37   | -6%     | ✓  | ✓     | 0.0  | 1.5   | ✓  | ✓     |
|                                                                                           | 1045  | 40404 | 30045 | Leith St (N)    | Greenside Row   | 93       | 2  | 95    | 32       | 1  | 33    | -61                       | -69%  | -62   | -65%    | ✓  | ✓     | 7.6  | 7.8   | ✗  | ✗     |
|                                                                                           | 1045  | 30044 | 30045 | Leith St (S)    | Greenside Row   | 40       | 2  | 42    | 48       | 2  | 50    | 8                         | 21%   | 8     | 19%     | ✓  | ✓     | 0.3  | 1.2   | ✓  | ✓     |
|                                                                                           | 1045  | 30044 | 30044 | Leith St (S)    | Leith St (N)    | 493      | 26 | 519   | 328      | 17 | 345   | -165                      | -40%  | -174  | -34%    | ✗  | ✗     | 7.3  | 8.4   | ✗  | ✗     |
|                                                                                           | 1045  | 30061 | 30044 | Greenside Row   | Leith St (N)    | 37       | 10 | 47    | 15       | 0  | 15    | -22                       | -79%  | -32   | -68%    | ✓  | ✓     | 3.6  | 5.7   | ✓  | ✗     |
|                                                                                           | 1045  | 30061 | 30042 | Greenside Row   | Leith St (S)    | 38       | 4  | 42    | 11       | 1  | 12    | -27                       | -90%  | -30   | -71%    | ✓  | ✓     | 6.0  | 5.8   | ✗  | ✗     |
| <b>Leith Street (N) / St James Access / Leith St (S) / Calton Rd (Site 10 - Grontmij)</b> |       |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                                           | 1132  | 30042 | 30042 | Leith St (N)    | Leith St (S)    | 371      | 26 | 397   | 336      | 6  | 342   | -35                       | -11%  | -55   | -14%    | ✓  | ✓     | 0.6  | 2.9   | ✓  | ✓     |
|                                                                                           | 1132  | 30042 | 30046 | Leith St (N)    | Calton Rd       | 247      | 5  | 252   | 189      | 12 | 201   | -58                       | -26%  | -51   | -20%    | ✓  | ✓     | 4.2  | 3.4   | ✓  | ✓     |
|                                                                                           | 1132  | 704   | 30044 | St James Access | Leith St (N)    | 10       | 3  | 13    | 13       | 7  | 20    | 3                         | 30%   | 7     | 54%     | ✓  | ✓     | 0.7  | 1.7   | ✓  | ✓     |
|                                                                                           | 1132  | 30044 | 30044 | Leith St (S)    | Leith St (N)    | 539      | 25 | 564   | 364      | 12 | 376   | -175                      | -38%  | -188  | -33%    | ✗  | ✗     | 7.3  | 8.7   | ✗  | ✗     |
|                                                                                           | 1132  | 30049 | 30042 | Calton Rd       | Leith St (S)    | 37       | 4  | 41    | 74       | 2  | 76    | 37                        | 142%  | 35    | 85%     | ✓  | ✓     | 5.7  | 4.6   | ✗  | ✓     |
| <b>Leith St / Princes St / Waterloo PI (Grontmij Site 11)</b>                             |       |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                                           | 1022  | 30037 | 30020 | Leith St        | Waterloo PI (E) | 15       | 3  | 18    | 0        | 0  | 0     | -15                       | -125% | -18   | -100%   | ✓  | ✓     | 4.9  | 6.0   | ✓  | ✗     |
|                                                                                           | 1022  | 30037 | 30034 | Leith St        | North Bridge    | 278      | 18 | 296   | 374      | 7  | 381   | 96                        | 41%   | 85    | 29%     | ✓  | ✓     | 6.0  | 4.6   | ✗  | ✓     |
|                                                                                           | 1022  | 30037 | 664   | Leith St        | Princes St      | 70       | 4  | 74    | 39       | 1  | 40    | -31                       | -52%  | -34   | -46%    | ✓  | ✓     | 3.1  | 4.5   | ✓  | ✓     |
|                                                                                           | 1022  | 30023 | 30034 | Waterloo PI (E) | North Bridge    | 74       | 3  | 77    | 29       | 2  | 31    | -45                       | -68%  | -46   | -60%    | ✓  | ✓     | 5.7  | 6.2   | ✗  | ✗     |
|                                                                                           | 1022  | 30023 | 664   | Waterloo PI (E) | Princes St      | 18       | 1  | 19    | 56       | 8  | 64    | 38                        | 229%  | 45    | 233%    | ✓  | ✓     | 5.2  | 6.9   | ✗  | ✗     |
|                                                                                           | 1022  | 30023 | 30036 | Waterloo PI (E) | Leith St        | 57       | 3  | 60    | 43       | 1  | 44    | -14                       | -26%  | -16   | -27%    | ✓  | ✓     | 1.6  | 2.2   | ✓  | ✓     |
|                                                                                           | 1022  | 30031 | 664   | North Bridge    | Princes St      | 52       | 2  | 54    | 27       | 0  | 27    | -25                       | -57%  | -27   | -50%    | ✓  | ✓     | 4.2  | 4.2   | ✓  | ✓     |
|                                                                                           | 1022  | 30031 | 30036 | North Bridge    | Leith St        | 439      | 19 | 457   | 330      | 15 | 345   | -109                      | -29%  | -112  | -25%    | ✗  | ✗     | 5.5  | 5.6   | ✗  | ✗     |
|                                                                                           | 1022  | 30031 | 30020 | North Bridge    | Waterloo PI (E) | 26       | 1  | 27    | 65       | 0  | 65    | 39                        | 180%  | 38    | 142%    | ✓  | ✓     | 5.9  | 5.6   | ✗  | ✗     |
|                                                                                           | 1022  | 746   | 30036 | Princes St      | Leith St        | 51       | 1  | 52    | 7        | 0  | 7     | -44                       | -88%  | -45   | -86%    | ✓  | ✓     | 9.1  | 8.3   | ✗  | ✗     |
|                                                                                           | 1022  | 746   | 30020 | Princes St      | Waterloo PI (E) | 21       | 1  | 22    | 16       | 0  | 16    | -5                        | -25%  | -6    | -26%    | ✓  | ✓     | 2.3  | 1.3   | ✓  | ✓     |
|                                                                                           | 1022  | 746   | 30034 | Princes St      | North Bridge    | 77       | 6  | 84    | 1        | 0  | 1     | -76                       | -109% | -83   | -99%    | ✓  | ✓     | 11.6 | 12.7  | ✗  | ✗     |



## Trams to Granton, BioQuarter and Beyond Microsimulation Modelling Summary

|                                                                       |       |       |       |                      |                      | Observed |    |       | Modelled |    |       | Difference / % Difference |       |       |         |    |       | GEH |       |    |       |
|-----------------------------------------------------------------------|-------|-------|-------|----------------------|----------------------|----------|----|-------|----------|----|-------|---------------------------|-------|-------|---------|----|-------|-----|-------|----|-------|
|                                                                       | Node  | From  | To    | From                 | To                   | LV       | HV | Total | LV       | HV | Total | LV                        | LV %  | Total | Total % | LV | Total | LV  | Total | LV | Total |
| George St/ Hanover St (Tracsis site 87 2016)                          |       |       |       |                      |                      |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |
|                                                                       | 1010  | 30010 | 30234 | Hanover St (N)       | Hanover St (N)       | 1        | 0  | 1     | 10       | 0  | 10    | 9                         | 900%  | 9     | 900%    | ✓  | ✓     | 2.7 | 3.8   | ✓  | ✓     |
|                                                                       | 1010  | 30010 | 725   | Hanover St (N)       | George St (E)        | 33       | 3  | 36    | 27       | 0  | 27    | -6                        | -21%  | -9    | -25%    | ✓  | ✓     | 1.0 | 1.6   | ✓  | ✓     |
|                                                                       | 1010  | 30010 | 30236 | Hanover St (N)       | Hanover St (S)       | 197      | 10 | 207   | 181      | 6  | 187   | -16                       | -9%   | -20   | -10%    | ✓  | ✓     | 1.8 | 1.4   | ✓  | ✓     |
|                                                                       | 1010  | 30010 | 30233 | Hanover St (N)       | George St (W)        | 24       | 3  | 27    | 34       | 3  | 37    | 10                        | 53%   | 10    | 37%     | ✓  | ✓     | 2.4 | 1.8   | ✓  | ✓     |
|                                                                       | 1010  | 30014 | 30234 | George St (E)        | Hanover St (N)       | 42       | 1  | 43    | 53       | 5  | 58    | 11                        | 31%   | 15    | 35%     | ✓  | ✓     | 1.0 | 2.1   | ✓  | ✓     |
|                                                                       | 1010  | 30014 | 30235 | George St (E)        | George St (E)        | 1        | 0  | 1     | 0        | 0  | 0     | -1                        | 0%    | -1    | -100%   | ✓  | ✓     | 0.0 | 1.4   | ✓  | ✓     |
|                                                                       | 1010  | 30014 | 30236 | George St (E)        | Hanover St (S)       | 9        | 2  | 11    | 60       | 0  | 60    | 51                        | 850%  | 49    | 445%    | ✓  | ✓     | 7.7 | 8.2   | ✗  | ✗     |
|                                                                       | 1010  | 30014 | 30233 | George St (E)        | George St (W)        | 33       | 6  | 39    | 71       | 4  | 75    | 38                        | 211%  | 36    | 92%     | ✓  | ✓     | 6.8 | 4.8   | ✗  | ✓     |
|                                                                       | 1010  | 30059 | 30234 | Hanover St (S)       | Hanover St (N)       | 299      | 11 | 310   | 294      | 7  | 301   | -5                        | -2%   | -9    | -3%     | ✓  | ✓     | 1.6 | 0.5   | ✓  | ✓     |
|                                                                       | 1010  | 30059 | 725   | Hanover St (S)       | George St (E)        | 36       | 0  | 36    | 33       | 0  | 33    | -3                        | -11%  | -3    | -8%     | ✓  | ✓     | 0.6 | 0.5   | ✓  | ✓     |
|                                                                       | 1010  | 30059 | 30236 | Hanover St (S)       | Hanover St (S)       | 1        | 0  | 1     | 0        | 0  | 0     | -1                        | 0%    | -1    | -100%   | ✓  | ✓     | 0.0 | 1.4   | ✓  | ✓     |
|                                                                       | 1010  | 30059 | 30233 | Hanover St (S)       | George St (W)        | 73       | 1  | 74    | 122      | 0  | 122   | 49                        | 74%   | 48    | 65%     | ✓  | ✓     | 4.2 | 4.8   | ✓  | ✓     |
|                                                                       | 1010  | 30012 | 30234 | George St (W)        | Hanover St (N)       | 23       | 6  | 29    | 42       | 1  | 43    | 19                        | 127%  | 14    | 48%     | ✓  | ✓     | 3.0 | 2.3   | ✓  | ✓     |
|                                                                       | 1010  | 30012 | 725   | George St (W)        | George St (E)        | 33       | 0  | 33    | 41       | 2  | 43    | 8                         | 29%   | 10    | 30%     | ✓  | ✓     | 0.4 | 1.6   | ✓  | ✓     |
|                                                                       | 1010  | 30012 | 30236 | George St (W)        | Hanover St (S)       | 78       | 1  | 79    | 84       | 0  | 84    | 6                         | 9%    | 5     | 6%      | ✓  | ✓     | 1.4 | 0.6   | ✓  | ✓     |
|                                                                       | 1010  | 30012 | 30233 | George St (W)        | George St (W)        | 11       | 1  | 12    | 16       | 6  | 22    | 5                         | 56%   | 10    | 83%     | ✓  | ✓     | 4.2 | 2.4   | ✓  | ✓     |
| Lawnmarket/ Bank St/ High St/ George IV Bridge (Tracsis site 22 2016) |       |       |       |                      |                      |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |
|                                                                       | 1015  | 816   | 817   | Bank St              | George IV Bridge     | 229      | 10 | 239   | 263      | 7  | 270   | 34                        | 16%   | 31    | 13%     | ✓  | ✓     | 1.0 | 1.9   | ✓  | ✓     |
|                                                                       | 1015  | 816   | 30347 | Bank St              | Lawnmarket           | 27       | 1  | 28    | 49       | 6  | 55    | 22                        | 105%  | 27    | 96%     | ✓  | ✓     | 2.1 | 4.2   | ✓  | ✓     |
|                                                                       | 1015  | 30124 | 815   | George IV Bridge     | Bank St              | 338      | 11 | 349   | 272      | 8  | 280   | -66                       | -24%  | -69   | -20%    | ✓  | ✓     | 2.5 | 3.9   | ✓  | ✓     |
|                                                                       | 1015  | 30124 | 30347 | George IV Bridge     | Lawnmarket           | 46       | 7  | 53    | 17       | 5  | 22    | -29                       | -104% | -31   | -58%    | ✓  | ✓     | 2.6 | 5.1   | ✓  | ✗     |
|                                                                       | 1015  | 30135 | 815   | Lawnmarket           | Bank St              | 20       | 5  | 25    | 17       | 0  | 17    | -3                        | -19%  | -8    | -32%    | ✓  | ✓     | 0.2 | 1.7   | ✓  | ✓     |
|                                                                       | 1015  | 30135 | 817   | Lawnmarket           | George IV Bridge     | 15       | 1  | 16    | 10       | 0  | 10    | -5                        | -56%  | -6    | -38%    | ✓  | ✓     | 0.3 | 1.7   | ✓  | ✓     |
| Chambers St/ George IV Bridge (Tracsis site 103 2016)                 |       |       |       |                      |                      |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |
|                                                                       | 30238 | 119   | 20286 | George IV Bridge (N) | Chambers St          | 20       | 1  | 21    | 44       | 0  | 44    | 24                        | 150%  | 23    | 110%    | ✓  | ✓     | 4.5 | 4.0   | ✓  | ✓     |
|                                                                       | 30238 | 119   | 119   | George IV Bridge (N) | George IV Bridge (S) | 277      | 12 | 289   | 229      | 7  | 236   | -48                       | -20%  | -53   | -18%    | ✓  | ✓     | 3.2 | 3.3   | ✓  | ✓     |
|                                                                       | 30238 | 20285 | 118   | Chambers St          | George IV Bridge (N) | 8        | 2  | 10    | 0        | 0  | 0     | -8                        | -114% | -10   | -100%   | ✓  | ✓     | 3.7 | 4.5   | ✓  | ✓     |
|                                                                       | 30238 | 20285 | 119   | Chambers St          | George IV Bridge (S) | 122      | 6  | 128   | 69       | 10 | 79    | -53                       | -53%  | -49   | -38%    | ✓  | ✓     | 4.9 | 4.8   | ✓  | ✓     |
|                                                                       | 30238 | 118   | 118   | George IV Bridge (S) | George IV Bridge (N) | 320      | 20 | 340   | 292      | 13 | 305   | -28                       | -11%  | -35   | -10%    | ✓  | ✓     | 0.6 | 1.9   | ✓  | ✓     |
|                                                                       | 30238 | 118   | 20286 | George IV Bridge (S) | Chambers St          | 106      | 2  | 108   | 126      | 3  | 129   | 20                        | 21%   | 21    | 19%     | ✓  | ✓     | 1.6 | 1.9   | ✓  | ✓     |
| Forest Rd/ George IV Bridge (Tracsis site 5 2016)                     |       |       |       |                      |                      | 0        |    | 0     | 0        |    | 0     |                           |       |       |         |    |       |     |       |    |       |
|                                                                       | 30263 | 85    | 85    | George IV Bridge     | Bristo Pl            | 371      | 19 | 390   | 302      | 17 | 319   | -69                       | -21%  | -71   | -18%    | ✓  | ✓     | 3.8 | 3.8   | ✓  | ✓     |
|                                                                       | 30263 | 93    | 118   | Forrest Rd           | George IV Bridge     | 517      | 23 | 540   | 431      | 17 | 448   | -86                       | -20%  | -92   | -17%    | ✓  | ✓     | 2.9 | 4.1   | ✓  | ✓     |
|                                                                       | 30263 | 93    | 85    | Forrest Rd           | Bristo Pl            | 171      | 8  | 179   | 99       | 2  | 101   | -72                       | -49%  | -78   | -44%    | ✓  | ✓     | 5.8 | 6.6   | ✗  | ✗     |
| Lauriston Pl/ Forrest Rd (Tracsis site 25 2016)                       |       |       |       |                      |                      |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |

# Trams to Granton, BioQuarter and Beyond Microsimulation Modelling Summary

|                                                                            | Node  | From  | To    | From            | To              | Observed |    |       | Modelled |    |       | Difference / % Difference |       |       |         |    |       | GEH |       |    |       |
|----------------------------------------------------------------------------|-------|-------|-------|-----------------|-----------------|----------|----|-------|----------|----|-------|---------------------------|-------|-------|---------|----|-------|-----|-------|----|-------|
|                                                                            |       |       |       |                 |                 | LV       | HV | Total | LV       | HV | Total | LV                        | LV %  | Total | Total % | LV | Total | LV  | Total | LV | Total |
|                                                                            | 30241 | 47    | 94    | Teviot Pl       | Forrest Rd      | 307      | 16 | 323   | 204      | 7  | 211   | -103                      | -42%  | -112  | -35%    | ×  | ×     | 4.5 | 6.9   | ✓  | ×     |
|                                                                            | 30241 | 47    | 69    | Teviot Pl       | Lauriston Pl    | 501      | 22 | 523   | 429      | 12 | 441   | -72                       | -16%  | -82   | -16%    | ✓  | ✓     | 4.0 | 3.7   | ✓  | ✓     |
|                                                                            | 30241 | 84    | 94    | Lauriston Pl    | Forrest Rd      | 375      | 15 | 390   | 330      | 12 | 342   | -45                       | -13%  | -48   | -12%    | ✓  | ✓     | 2.9 | 2.5   | ✓  | ✓     |
| <b>Waverly Bridge/ Market St (Tracsis site 111 2016)</b>                   |       |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |
|                                                                            | 1024  | 30131 | 30126 | Market St (E)   | Market St (W)   | 149      | 3  | 152   | 239      | 9  | 248   | 90                        | 70%   | 96    | 63%     | ✓  | ✓     | 6.0 | 6.8   | ×  | ×     |
|                                                                            | 1024  | 30125 | 30130 | Market St (W)   | Market St (E)   | 66       | 3  | 69    | 106      | 2  | 108   | 40                        | 70%   | 39    | 57%     | ✓  | ✓     | 3.8 | 4.1   | ✓  | ✓     |
| <b>Cowgatehead/ Cowgate/ Candlemaker Row (Tracsis site 21 2016)</b>        |       |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |
|                                                                            | 30236 | 524   | 124   | Cowgate         | Candlemaker Row | 5        | 1  | 6     | 0        | 0  | 0     | -5                        | -100% | -6    | -100%   | ✓  | ✓     | 3.2 | 3.5   | ✓  | ✓     |
|                                                                            | 30236 | 524   | 128   | Cowgate         | Cowgatehead     | 565      | 8  | 573   | 591      | 15 | 606   | 26                        | 5%    | 33    | 6%      | ✓  | ✓     | 0.5 | 1.4   | ✓  | ✓     |
|                                                                            | 30236 | 125   | 560   | Candlemaker Row | Cowgate         | 29       | 3  | 32    | 10       | 0  | 10    | -19                       | -79%  | -22   | -69%    | ✓  | ✓     | 3.4 | 4.8   | ✓  | ✓     |
|                                                                            | 30236 | 125   | 128   | Candlemaker Row | Cowgatehead     | 63       | 3  | 66    | 3        | 1  | 4     | -60                       | -125% | -62   | -94%    | ✓  | ✓     | 8.9 | 10.5  | ×  | ×     |
|                                                                            | 30236 | 127   | 560   | Cowgatehead     | Cowgate         | 375      | 22 | 397   | 474      | 26 | 500   | 99                        | 33%   | 103   | 26%     | ✓  | ×     | 4.3 | 4.9   | ✓  | ✓     |
|                                                                            | 30236 | 127   | 124   | Cowgatehead     | Candlemaker Row | 6        | 0  | 6     | 0        | 0  | 0     | -6                        | -200% | -6    | -100%   | ✓  | ✓     | 2.4 | 3.5   | ✓  | ✓     |
| <b>The Royal Mile/ New St (Tracsis site 40 2016)</b>                       |       |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |
|                                                                            | 178   | 30611 | 541   | New St          | Canongate       | 22       | 0  | 22    | 2        | 0  | 2     | -20                       | -95%  | -20   | -91%    | ✓  | ✓     | 5.6 | 5.8   | ×  | ×     |
|                                                                            | 178   | 30611 | 30536 | New St          | The Royal Mile  | 54       | 1  | 55    | 107      | 2  | 109   | 53                        | 110%  | 54    | 98%     | ✓  | ✓     | 5.8 | 6.0   | ×  | ×     |
|                                                                            | 178   | 30536 | 30536 | Canongate       | The Royal Mile  | 299      | 13 | 312   | 308      | 5  | 313   | 9                         | 4%    | 1     | 0%      | ✓  | ✓     | 1.1 | 0.1   | ✓  | ✓     |
|                                                                            | 178   | 541   | 541   | The Royal Mile  | Canongate       | 176      | 16 | 192   | 207      | 4  | 211   | 31                        | 24%   | 19    | 10%     | ✓  | ✓     | 4.4 | 1.3   | ✓  | ✓     |
| <b>Grassmarket/ Cowgatehead/ West Bow (Tracsis site 61 2016)</b>           |       |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |
|                                                                            | 30235 | 128   | 129   | Cowgatehead     | West Bow        | 28       | 4  | 32    | 0        |    | 0     |                           |       |       |         |    |       |     |       |    |       |
|                                                                            | 30235 | 128   | 128   | Cowgatehead     | Grassmarket     | 603      | 7  | 610   | 596      | 16 | 612   | -7                        | -1%   | 2     | 0%      | ✓  | ✓     | 0.8 | 0.1   | ✓  | ✓     |
|                                                                            | 30235 | 127   | 129   | Grassmarket     | West Bow        | 107      | 13 | 120   | 0        |    | 0     |                           |       |       |         |    |       |     |       |    |       |
|                                                                            | 30235 | 127   | 127   | Grassmarket     | Cowgatehead     | 388      | 23 | 411   | 472      | 26 | 498   | 84                        | 27%   | 87    | 21%     | ✓  | ✓     | 3.7 | 4.1   | ✓  | ✓     |
| <b>West Preston St/ Causewayside/ Summerhall Pl (Tracsis site 34 2016)</b> |       |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |
|                                                                            | 55    | 72    | 77    | W Preston St    | Causewayside    | 22       | 0  | 22    | 3        | 0  | 3     | -19                       | -95%  | -19   | -86%    | ✓  | ✓     | 5.0 | 5.4   | ×  | ×     |
|                                                                            | 55    | 72    | 76    | W Preston St    | Summerhall Pl   | 211      | 3  | 214   | 247      | 4  | 251   | 36                        | 19%   | 37    | 17%     | ✓  | ✓     | 2.6 | 2.4   | ✓  | ✓     |
|                                                                            | 55    | 73    | 67    | Causewayside    | W Preston St    | 109      | 1  | 110   | 130      | 3  | 133   | 21                        | 20%   | 23    | 21%     | ✓  | ✓     | 1.9 | 2.1   | ✓  | ✓     |
|                                                                            | 55    | 73    | 76    | Causewayside    | Summerhall Pl   | 324      | 13 | 337   | 432      | 17 | 449   | 108                       | 41%   | 112   | 33%     | ×  | ×     | 6.7 | 5.6   | ×  | ×     |
|                                                                            | 55    | 75    | 67    | Summerhall Pl   | W Preston St    | 162      | 4  | 166   | 129      | 1  | 130   | -33                       | -22%  | -36   | -22%    | ✓  | ✓     | 2.5 | 3.0   | ✓  | ✓     |
|                                                                            | 55    | 75    | 77    | Summerhall Pl   | Causewayside    | 228      | 8  | 236   | 288      | 12 | 300   | 60                        | 30%   | 64    | 27%     | ✓  | ✓     | 3.8 | 3.9   | ✓  | ✓     |
| <b>High St/ North Bridge/ South Bridge (Tracsis site 6 2016)</b>           |       |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |
|                                                                            | 182   | 500   | 556   | North Bridge    | High St (E)     | 14       | 3  | 17    | 0        | 0  | 0     | -14                       | -140% | -17   | -100%   | ✓  | ✓     | 4.5 | 5.8   | ✓  | ×     |
|                                                                            | 182   | 500   | 558   | North Bridge    | South Bridge    | 273      | 14 | 287   | 395      | 9  | 404   | 122                       | 52%   | 117   | 41%     | ×  | ×     | 7.0 | 6.3   | ×  | ×     |
|                                                                            | 182   | 500   | 30347 | North Bridge    | High St (W)     | 26       | 6  | 32    | 0        | 0  | 0     | -26                       |       |       |         |    |       |     |       |    |       |
|                                                                            | 182   | 543   | 580   | High St (E)     | North Bridge    | 41       | 1  | 42    | 3        | 0  | 3     | -38                       | -103% | -39   | -93%    | ✓  | ✓     | 7.6 | 8.2   | ×  | ×     |
|                                                                            | 182   | 543   | 558   | High St (E)     | South Bridge    | 38       | 4  | 42    | 0        | 0  | 0     | -38                       | -127% | -42   | -100%   | ✓  | ✓     | 7.7 | 9.2   | ×  | ×     |

# Trams to Granton, BioQuarter and Beyond Microsimulation Modelling Summary

|                                                                                   |      |       |       |                 |                 | Observed |    |       | Modelled |    |       | Difference / % Difference |       |       |         |    |       | GEH  |       |    |       |
|-----------------------------------------------------------------------------------|------|-------|-------|-----------------|-----------------|----------|----|-------|----------|----|-------|---------------------------|-------|-------|---------|----|-------|------|-------|----|-------|
|                                                                                   | Node | From  | To    | From            | To              | LV       | HV | Total | LV       | HV | Total | LV                        | LV %  | Total | Total % | LV | Total | LV   | Total | LV | Total |
|                                                                                   | 182  | 579   | 580   | South Bridge    | North Bridge    | 416      | 17 | 433   | 409      | 14 | 423   | -7                        | -2%   | -10   | -2%     | ✓  | ✓     | 1.2  | 0.5   | ✓  | ✓     |
|                                                                                   | 182  | 579   | 556   | South Bridge    | High St (E)     | 14       | 0  | 14    | 0        | 0  | 0     | -14                       |       |       |         |    |       |      |       |    |       |
|                                                                                   | 182  | 579   | 30347 | South Bridge    | High St (W)     | 39       | 3  | 42    | 0        | 0  | 0     | -39                       |       |       |         |    |       |      |       |    |       |
| <b>Nicolson St/ W Nicolson St/ W Richmond St (Tracsis site 99 2016)</b>           |      |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                                   | 47   | 30319 | 209   | Nicolson St (N) | W Richmond St   | 13       | 0  | 13    | 0        | 0  | 0     | -13                       | -144% | -13   | -100%   | ✓  | ✓     | 4.2  | 5.1   | ✓  | ✗     |
|                                                                                   | 47   | 30319 | 30318 | Nicolson St (N) | Nicolson St (S) | 179      | 15 | 194   | 284      | 2  | 286   | 105                       | 73%   | 92    | 47%     | ✗  | ✓     | 7.9  | 5.9   | ✗  | ✗     |
|                                                                                   | 47   | 30319 | 207   | Nicolson St (N) | W Nicolson St   | 11       | 2  | 13    | 0        | 0  | 0     | -11                       | -122% | -13   | -100%   | ✓  | ✓     | 4.2  | 5.1   | ✓  | ✗     |
|                                                                                   | 47   | 590   | 271   | W Richmond St   | Nicolson St (N) | 35       | 0  | 35    | 33       | 1  | 34    | -2                        | -7%   | -1    | -3%     | ✓  | ✓     | 0.2  | 0.2   | ✓  | ✓     |
|                                                                                   | 47   | 590   | 30318 | W Richmond St   | Nicolson St (S) | 18       | 2  | 20    | 5        | 0  | 5     | -13                       | -93%  | -15   | -75%    | ✓  | ✓     | 3.3  | 4.2   | ✓  | ✓     |
|                                                                                   | 47   | 590   | 207   | W Richmond St   | W Nicolson St   | 70       | 7  | 77    | 32       | 0  | 32    | -38                       | -61%  | -45   | -58%    | ✓  | ✓     | 5.2  | 6.1   | ✗  | ✗     |
|                                                                                   | 47   | 271   | 271   | Nicolson St (S) | Nicolson St (N) | 361      | 15 | 376   | 295      | 9  | 304   | -66                       | -21%  | -72   | -19%    | ✓  | ✓     | 4.1  | 3.9   | ✓  | ✓     |
|                                                                                   | 47   | 271   | 209   | Nicolson St (S) | W Richmond St   | 23       | 0  | 23    | 29       | 6  | 35    | 6                         | 33%   | 12    | 52%     | ✓  | ✓     | 1.3  | 2.2   | ✓  | ✓     |
|                                                                                   | 47   | 271   | 207   | Nicolson St (S) | W Nicolson St   | 9        | 1  | 10    | 101      | 0  | 101   | 92                        | 1022% | 91    | 910%    | ✓  | ✓     | 11.3 | 12.2  | ✗  | ✗     |
|                                                                                   | 47   | 460   | 271   | W Nicolson St   | Nicolson St (N) | 57       | 1  | 58    | 82       | 5  | 87    | 25                        | 50%   | 29    | 50%     | ✓  | ✓     | 2.2  | 3.4   | ✓  | ✓     |
|                                                                                   | 47   | 460   | 209   | W Nicolson St   | W Richmond St   | 77       | 0  | 77    | 50       | 0  | 50    | -27                       | -42%  | -27   | -35%    | ✓  | ✓     | 2.6  | 3.4   | ✓  | ✓     |
|                                                                                   | 47   | 460   | 30318 | W Nicolson St   | Nicolson St (S) | 13       | 0  | 13    | 22       | 0  | 22    | 9                         | 82%   | 9     | 69%     | ✓  | ✓     | 1.8  | 2.2   | ✓  | ✓     |
| <b>South Clerk St/ Hope Park Terrace/ Bernard Terr (Tracsis site 4 2016)</b>      |      |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                                   | 41   | 260   | 99    | S Clerk St (N)  | Bernard Terrace | 24       | 1  | 25    | 67       | 0  | 67    | 43                        | 215%  | 42    | 168%    | ✓  | ✓     | 6.2  | 6.2   | ✗  | ✗     |
|                                                                                   | 41   | 260   | 260   | S Clerk St (N)  | S Clerk St (S)  | 132      | 11 | 143   | 150      | 1  | 151   | 18                        | 15%   | 8     | 6%      | ✓  | ✓     | 1.5  | 0.7   | ✓  | ✓     |
|                                                                                   | 41   | 260   | 89    | S Clerk St (N)  | Hope Park Ter   | 28       | 0  | 28    | 81       | 0  | 81    | 53                        | 353%  | 53    | 189%    | ✓  | ✓     | 8.8  | 7.2   | ✗  | ✗     |
|                                                                                   | 41   | 101   | 259   | Bernard Ter     | S Clerk St (N)  | 15       | 3  | 18    | 135      | 3  | 138   | 120                       | 923%  | 120   | 667%    | ✗  | ✗     | 12.9 | 13.6  | ✗  | ✗     |
|                                                                                   | 41   | 101   | 260   | Bernard Ter     | S Clerk St (S)  | 7        | 0  | 7     | 14       | 0  | 14    | 7                         | 100%  | 7     | 100%    | ✓  | ✓     | 2.2  | 2.2   | ✓  | ✓     |
|                                                                                   | 41   | 101   | 89    | Bernard Ter     | Hope Park Ter   | 168      | 3  | 171   | 209      | 1  | 210   | 41                        | 28%   | 39    | 23%     | ✓  | ✓     | 3.1  | 2.8   | ✓  | ✓     |
|                                                                                   | 41   | 259   | 259   | S Clerk St (S)  | S Clerk St (N)  | 402      | 9  | 411   | 284      | 9  | 293   | -118                      | -34%  | -118  | -29%    | ✗  | ✗     | 6.6  | 6.3   | ✗  | ✗     |
|                                                                                   | 41   | 259   | 99    | S Clerk St (S)  | Bernard Terrace | 11       | 2  | 13    | 0        | 0  | 0     | -11                       | -183% | -13   | -100%   | ✓  | ✓     | 3.5  | 5.1   | ✓  | ✗     |
|                                                                                   | 41   | 259   | 89    | S Clerk St (S)  | Hope Park Ter   | 56       | 3  | 59    | 158      | 5  | 163   | 102                       | 213%  | 104   | 176%    | ✗  | ✗     | 9.4  | 9.9   | ✗  | ✗     |
|                                                                                   | 41   | 107   | 259   | Hope Park Ter   | S Clerk St (N)  | 43       | 5  | 48    | 31       | 4  | 35    | -12                       | -32%  | -13   | -27%    | ✓  | ✓     | 2.5  | 2.0   | ✓  | ✓     |
|                                                                                   | 41   | 107   | 99    | Hope Park Ter   | Bernard Terrace | 183      | 6  | 189   | 151      | 0  | 151   | -32                       | -20%  | -38   | -20%    | ✓  | ✓     | 2.4  | 2.9   | ✓  | ✓     |
|                                                                                   | 41   | 107   | 260   | Hope Park Ter   | S Clerk St (S)  | 46       | 0  | 46    | 101      | 5  | 106   | 55                        | 128%  | 60    | 130%    | ✓  | ✓     | 5.8  | 6.9   | ✗  | ✗     |
| <b>Newington Rd/ Salisbury Rd/ Minto St/ Salisbury PI (Tracsis site 107 2016)</b> |      |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                                   | 37   | 252   | 248   | Newington Rd    | Minto St        | 192      | 11 | 203   | 259      | 3  | 262   | 67                        | 40%   | 59    | 29%     | ✓  | ✓     | 4.8  | 3.9   | ✓  | ✓     |
|                                                                                   | 37   | 252   | 57    | Newington Rd    | Salisbury PI    | 40       | 1  | 41    | 21       | 0  | 21    | -19                       | -56%  | -20   | -49%    | ✓  | ✓     | 2.9  | 3.6   | ✓  | ✓     |
|                                                                                   | 37   | 58    | 464   | Salisbury Rd    | Minto St        | 33       | 0  | 33    | 65       | 0  | 65    | 32                        | 103%  | 32    | 97%     | ✓  | ✓     | 4.3  | 4.6   | ✓  | ✓     |
|                                                                                   | 37   | 58    | 57    | Salisbury Rd    | Salisbury PI    | 276      | 2  | 278   | 186      | 2  | 188   | -90                       | -35%  | -90   | -32%    | ✓  | ✓     | 5.3  | 5.9   | ✗  | ✗     |
|                                                                                   | 37   | 58    | 248   | Salisbury Rd    | Newington Rd    | 2        | 2  | 4     | 81       | 0  | 81    | 79                        | 3950% | 77    | 1925%   | ✓  | ✓     | 12.1 | 11.8  | ✗  | ✗     |
|                                                                                   | 37   | 30267 | 57    | Minto St        | Salisbury PI    | 165      | 0  | 165   | 42       | 0  | 42    | -123                      | -85%  | -123  | -75%    | ✗  | ✗     | 10.8 | 12.1  | ✗  | ✗     |

# Trams to Granton, BioQuarter and Beyond Microsimulation Modelling Summary

|                                                                             |      |       |       |                 |                 | Observed |    |       | Modelled |    |       | Difference / % Difference |       |       |         |    |       | GEH  |       |    |       |
|-----------------------------------------------------------------------------|------|-------|-------|-----------------|-----------------|----------|----|-------|----------|----|-------|---------------------------|-------|-------|---------|----|-------|------|-------|----|-------|
|                                                                             | Node | From  | To    | From            | To              | LV       | HV | Total | LV       | HV | Total | LV                        | LV %  | Total | Total % | LV | Total | LV   | Total | LV | Total |
|                                                                             | 37   | 30267 | 464   | Minto St        | Newington Rd    | 476      | 14 | 490   | 528      | 12 | 540   | 52                        | 13%   | 50    | 10%     | ✓  | ✓     | 2.3  | 2.2   | ✓  | ✓     |
|                                                                             | 37   | 56    | 464   | Salisbury Pl    | Newington Rd    | 115      | 0  | 115   | 79       | 3  | 82    | -36                       | -34%  | -33   | -29%    | ✓  | ✓     | 3.5  | 3.3   | ✓  | ✓     |
|                                                                             | 37   | 56    | 248   | Salisbury Pl    | Minto St        | 94       | 2  | 96    | 62       | 2  | 64    | -32                       | -39%  | -32   | -33%    | ✓  | ✓     | 3.1  | 3.6   | ✓  | ✓     |
| <b>Pleasance/ Cowgate/ St Mary's St/ Holyrood Rd (Tracsis site 10 2016)</b> |      |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                             | 189  | 548   | 527   | Pleasance       | Cowgate         | 194      | 6  | 200   | 103      | 8  | 111   | -91                       | -49%  | -89   | -45%    | ✓  | ✓     | 8.6  | 7.1   | ✗  | ✗     |
|                                                                             | 189  | 548   | 551   | Pleasance       | St Mary's St    | 184      | 8  | 192   | 200      | 1  | 201   | 16                        | 11%   | 9     | 5%      | ✓  | ✓     | 2.5  | 0.6   | ✓  | ✓     |
|                                                                             | 189  | 548   | 526   | Pleasance       | Holyrood Rd     | 94       | 2  | 96    | 72       | 0  | 72    | -22                       | -28%  | -24   | -25%    | ✓  | ✓     | 2.2  | 2.6   | ✓  | ✓     |
|                                                                             | 189  | 523   | 30600 | Cowgate         | Pleasance       | 65       | 4  | 69    | 97       | 0  | 97    | 32                        | 82%   | 28    | 41%     | ✓  | ✓     | 4.9  | 3.1   | ✓  | ✓     |
|                                                                             | 189  | 523   | 551   | Cowgate         | St Mary's St    | 54       | 7  | 61    | 136      | 19 | 155   | 82                        | 228%  | 94    | 154%    | ✓  | ✓     | 7.0  | 9.0   | ✗  | ✗     |
|                                                                             | 189  | 523   | 526   | Cowgate         | Holyrood Rd     | 203      | 7  | 210   | 266      | 7  | 273   | 63                        | 35%   | 63    | 30%     | ✓  | ✓     | 3.7  | 4.1   | ✓  | ✓     |
|                                                                             | 189  | 549   | 30600 | St Mary's St    | Pleasance       | 154      | 3  | 157   | 96       | 0  | 96    | -58                       | -46%  | -61   | -39%    | ✓  | ✓     | 3.3  | 5.4   | ✓  | ✗     |
|                                                                             | 189  | 549   | 527   | St Mary's St    | Cowgate         | 109      | 3  | 112   | 140      | 3  | 143   | 31                        | 34%   | 31    | 28%     | ✓  | ✓     | 2.8  | 2.7   | ✓  | ✓     |
|                                                                             | 189  | 549   | 526   | St Mary's St    | Holyrood Rd     | 24       | 3  | 27    | 88       | 1  | 89    | 64                        | 305%  | 62    | 230%    | ✓  | ✓     | 8.5  | 8.1   | ✗  | ✗     |
|                                                                             | 189  | 529   | 30600 | Holyrood Rd     | Pleasance       | 46       | 5  | 51    | 98       | 3  | 101   | 52                        | 163%  | 50    | 98%     | ✓  | ✓     | 6.8  | 5.7   | ✗  | ✗     |
|                                                                             | 189  | 529   | 527   | Holyrood Rd     | Cowgate         | 296      | 4  | 300   | 397      | 4  | 401   | 101                       | 37%   | 101   | 34%     | ✗  | ✗     | 5.2  | 5.4   | ✗  | ✗     |
|                                                                             | 189  | 529   | 551   | Holyrood Rd     | St Mary's St    | 10       | 1  | 11    | 0        | 0  | 0     | -10                       | -143% | -11   | -100%   | ✓  | ✓     | 3.7  | 4.7   | ✓  | ✓     |
| <b>Pleasance/ West Richmond St (Tracsis site 112 2016)</b>                  |      |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                             | 205  | 588   | 30658 | Pleasance (N)   | Brown St        | 6        | 0  | 6     | 2        | 0  | 2     | -4                        | -100% | -4    | -67%    | ✓  | ✓     | 1.9  | 2.0   | ✓  | ✓     |
|                                                                             | 205  | 588   | 589   | Pleasance (N)   | Pleasance (S)   | 229      | 10 | 239   | 235      | 2  | 237   | 6                         | 3%    | -2    | -1%     | ✓  | ✓     | 2.0  | 0.1   | ✓  | ✓     |
|                                                                             | 205  | 588   | 590   | Pleasance (N)   | W Richmond St   | 29       | 1  | 30    | 51       | 1  | 52    | 22                        | 96%   | 22    | 73%     | ✓  | ✓     | 2.9  | 3.4   | ✓  | ✓     |
|                                                                             | 205  | 661   | 30660 | Brown St        | Pleasance (N)   | 3        | 0  | 3     | 0        | 0  | 0     | -3                        | -100% | -3    | -100%   | ✓  | ✓     | 2.4  | 2.4   | ✓  | ✓     |
|                                                                             | 205  | 661   | 589   | Brown St        | Pleasance (S)   | 6        | 2  | 8     | 0        | 0  | 0     | -6                        | -100% | -8    | -100%   | ✓  | ✓     | 3.5  | 4.0   | ✓  | ✓     |
|                                                                             | 205  | 661   | 590   | Brown St        | W Richmond St   | 10       | 1  | 11    | 0        | 0  | 0     | -10                       | -143% | -11   | -100%   | ✓  | ✓     | 3.7  | 4.7   | ✓  | ✓     |
|                                                                             | 205  | 30659 | 30660 | Pleasance (S)   | Pleasance (N)   | 448      | 11 | 459   | 330      | 2  | 332   | -118                      | -30%  | -127  | -28%    | ✗  | ✗     | 5.4  | 6.4   | ✗  | ✗     |
|                                                                             | 205  | 30659 | 30658 | Pleasance (S)   | Brown St        | 5        | 2  | 7     | 2        | 0  | 2     | -3                        | -60%  | -5    | -71%    | ✓  | ✓     | 1.6  | 2.4   | ✓  | ✓     |
|                                                                             | 205  | 30659 | 590   | Pleasance (S)   | W Richmond St   | 81       | 8  | 89    | 9        | 0  | 9     | -72                       | -96%  | -80   | -90%    | ✓  | ✓     | 10.2 | 11.4  | ✗  | ✗     |
|                                                                             | 205  | 209   | 30660 | W Richmond St   | Pleasance (N)   | 34       | 2  | 36    | 61       | 7  | 68    | 27                        | 84%   | 32    | 89%     | ✓  | ✓     | 3.1  | 4.4   | ✓  | ✓     |
|                                                                             | 205  | 209   | 30658 | W Richmond St   | Brown St        | 8        | 2  | 10    | 9        | 0  | 9     | 1                         | 17%   | -1    | -10%    | ✓  | ✓     | 1.1  | 0.3   | ✓  | ✓     |
|                                                                             | 205  | 209   | 589   | W Richmond St   | Pleasance (S)   | 31       | 0  | 31    | 9        | 0  | 9     | -22                       | -85%  | -22   | -71%    | ✓  | ✓     | 4.1  | 4.9   | ✓  | ✓     |
| <b>East Preston Street/ Dalkeith Rd (Tracsis site 13 2016)</b>              |      |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                             | 68   | 163   | 163   | Dalkeith Rd (N) | Dalkeith Rd (S) | 363      | 10 | 373   | 274      | 2  | 276   | -89                       | -29%  | -97   | -26%    | ✓  | ✓     | 4.0  | 5.4   | ✓  | ✗     |
|                                                                             | 68   | 163   | 63    | Dalkeith Rd (N) | E Preston St    | 13       | 1  | 14    | 73       | 0  | 73    | 60                        | 545%  | 59    | 421%    | ✓  | ✓     | 9.2  | 8.9   | ✗  | ✗     |
|                                                                             | 68   | 166   | 167   | Dalkeith Rd (S) | Dalkeith Rd (N) | 593      | 15 | 608   | 616      | 4  | 620   | 23                        | 4%    | 12    | 2%      | ✓  | ✓     | 1.0  | 0.5   | ✓  | ✓     |
|                                                                             | 68   | 166   | 63    | Dalkeith Rd (S) | E Preston St    | 220      | 2  | 222   | 241      | 3  | 244   | 21                        | 10%   | 22    | 10%     | ✓  | ✓     | 0.9  | 1.4   | ✓  | ✓     |
|                                                                             | 68   | 115   | 167   | E Preston St    | Dalkeith Rd (N) | 55       | 1  | 56    | 59       | 1  | 60    | 4                         | 9%    | 4     | 7%      | ✓  | ✓     | 0.8  | 0.5   | ✓  | ✓     |
|                                                                             | 68   | 115   | 163   | E Preston St    | Dalkeith Rd (S) | 311      | 4  | 315   | 447      | 7  | 454   | 136                       | 46%   | 139   | 44%     | ✗  | ✗     | 6.4  | 7.1   | ✗  | ✗     |



# Trams to Granton, BioQuarter and Beyond Microsimulation Modelling Summary

|                                                                           |      |       |        |                    |                    | Observed |    |       | Modelled |    |       | Difference / % Difference |       |       |         |    |       | GEH  |       |    |       |
|---------------------------------------------------------------------------|------|-------|--------|--------------------|--------------------|----------|----|-------|----------|----|-------|---------------------------|-------|-------|---------|----|-------|------|-------|----|-------|
|                                                                           | Node | From  | To     | From               | To                 | LV       | HV | Total | LV       | HV | Total | LV                        | LV %  | Total | Total % | LV | Total | LV   | Total | LV | Total |
| Dalkeith Rd/ Holyrood Park Rd (Tracsis site 84 2016)                      |      |       |        |                    |                    |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                           | 67   | 163   | 122    | A7 Dalkeith Rd (N) | Holyrood Park Rd   | 339      | 5  | 344   | 320      | 1  | 321   | -19                       | -6%   | -23   | -7%     | ✓  | ✓     | 1.4  | 1.3   | ✓  | ✓     |
|                                                                           | 67   | 163   | 165    | A7 Dalkeith Rd (N) | A7 Dalkeith Rd (S) | 381      | 19 | 400   | 659      | 8  | 667   | 278                       | 84%   | 267   | 67%     | ✗  | ✗     | 13.8 | 11.6  | ✗  | ✗     |
|                                                                           | 67   | 30635 | 165    | Holyrood Park Rd   | A7 Dalkeith Rd (S) | 677      | 5  | 682   | 318      | 5  | 323   | -359                      | -56%  | -359  | -53%    | ✗  | ✗     | 14.9 | 16.0  | ✗  | ✗     |
|                                                                           | 67   | 30635 | 166    | Holyrood Park Rd   | A7 Dalkeith Rd (N) | 439      | 3  | 442   | 341      | 0  | 341   | -98                       | -23%  | -101  | -23%    | ✓  | ✗     | 5.2  | 5.1   | ✗  | ✗     |
|                                                                           | 67   | 169   | 166    | A7 Dalkeith Rd (S) | A7 Dalkeith Rd (N) | 475      | 14 | 489   | 512      | 7  | 519   | 37                        | 9%    | 30    | 6%      | ✓  | ✓     | 1.9  | 1.3   | ✓  | ✓     |
|                                                                           | 67   | 121   | 122    | A7 Dalkeith Rd (N) | Holyrood Park Rd   | 404      | 6  | 410   | 278      | 1  | 279   | -126                      | -34%  | -131  | -32%    | ✗  | ✗     | 6.6  | 7.1   | ✗  | ✗     |
| Dalkeith Rd/ Salisbury Rd (Tracsis site 59 2016)                          |      |       |        |                    |                    |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                           | 158  | 165   | 165    | Dalkeith Rd (N)    | Dalkeith Rd (S)    | 755      | 14 | 769   | 715      | 13 | 728   | -40                       | -6%   | -41   | -5%     | ✓  | ✓     | 0.7  | 1.5   | ✓  | ✓     |
|                                                                           | 158  | 461   | 59     | Dalkeith Rd (N)    | Salisbury Rd       | 304      | 1  | 305   | 220      | 2  | 222   | -84                       | -30%  | -83   | -27%    | ✓  | ✓     | 4.8  | 5.1   | ✓  | ✗     |
|                                                                           | 158  | 174   | 59     | Dalkeith Rd (S)    | Salisbury Rd       | 17       | 0  | 17    | 130      | 0  | 130   | 113                       | 942%  | 113   | 665%    | ✗  | ✗     | 13.8 | 13.2  | ✗  | ✗     |
|                                                                           | 158  |       |        | Dalkeith Rd (S)    | Dalkeith Rd (N)    | 851      | 20 | 871   | 1024     | 14 | 1038  | 173                       | 22%   | 167   | 19%     | ✗  | ✗     | 5.0  | 5.4   | ✗  | ✗     |
|                                                                           | 158  | 174   | 169    | Dalkeith Rd (S)    | Dalkeith Rd (N)    |          |    |       | 512      | 7  | 519   |                           |       |       |         |    |       |      |       |    |       |
|                                                                           | 158  | 121   | 121    | Dalkeith Rd (S)    | Dalkeith Rd (N)    |          |    |       | 277      | 2  | 279   |                           |       |       |         |    |       |      |       |    |       |
| Broughton St/ E London St/ Mansfield Pl/ London St (Tracsis site 37 2016) |      |       |        |                    |                    |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                           | 1043 | 30494 | 90055  | Broughton St SB    |                    | 531      | 9  | 540   | 546      | 10 | 556   | 15                        | 3%    | 16    | 3%      | ✓  | ✓     | 1.3  | 0.7   | ✓  | ✓     |
|                                                                           | 1043 | 20911 | 30052  | Broughton St NB    |                    | 374      | 13 | 387   | 415      | 12 | 427   | 41                        | 13%   | 40    | 10%     | ✓  | ✓     | 1.9  | 2.0   | ✓  | ✓     |
| Queen St/ N St David St (Tracsis site 43 2016)                            |      |       |        |                    |                    |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                           | 1040 | 30274 | 30154  | Queen St (E)       | N St David St      | 39       | 2  | 41    | 9        | 2  | 11    | -30                       | -94%  | -30   | -73%    | ✓  | ✓     | 6.0  | 5.9   | ✗  | ✗     |
|                                                                           | 1040 | 30274 | 30148  | Queen St (E)       | Queen St (W)       | 469      | 32 | 501   | 410      | 22 | 432   | -59                       | -15%  | -69   | -14%    | ✓  | ✓     | 2.9  | 3.2   | ✓  | ✓     |
|                                                                           | 1040 | 660   | 30147  | N St David St      | Queen St (E)       | 39       | 3  | 42    | 81       | 5  | 86    | 42                        | 131%  | 44    | 105%    | ✓  | ✓     | 5.4  | 5.5   | ✗  | ✗     |
|                                                                           | 1040 | 660   | 30148  | N St David St      | Queen St (W)       | 88       | 11 | 99    | 42       | 3  | 45    | -46                       | -67%  | -54   | -55%    | ✓  | ✓     | 4.6  | 6.4   | ✓  | ✗     |
|                                                                           | 1040 | 30147 | 30147  | Queen St (W)       | Queen St (E)       | 448      | 21 | 469   | 486      | 26 | 512   | 38                        | 10%   | 43    | 9%      | ✓  | ✓     | 1.7  | 1.9   | ✓  | ✓     |
|                                                                           | 1040 | 30147 | 30154  | Queen St (W)       | N St David St      | 67       | 5  | 72    | 15       | 2  | 17    | -52                       | -111% | -55   | -76%    | ✓  | ✓     | 8.0  | 8.2   | ✗  | ✗     |
| Princes St/ S St David St (Tracsis site 36 2016)                          |      |       |        |                    |                    |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                           | 1153 | 30277 | 30552  | S St David St      | Princes St (E)     | 53       | 8  | 61    | 28       | 0  | 28    | -25                       | -57%  | -33   | -54%    | ✓  | ✓     | 4.5  | 4.9   | ✓  | ✓     |
|                                                                           | 1153 | 30277 | 30018  | S St David St      | Princes St (W)     |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                           | 1153 | 636   | 30146  | Princes St (E)     | S St David St      | 165      | 9  | 174   | 123      | 9  | 132   | -42                       | -30%  | -42   | -24%    | ✓  | ✓     | 3.3  | 3.4   | ✓  | ✓     |
|                                                                           | 1153 | 30016 | 30018  | Princes St (E)     | Princes St (W)     |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                           | 1153 | 30552 | 30146  | Princes St (W)     | S St David St      |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                           | 1153 | 30552 | 30552  | Princes St (W)     | Princes St (E)     |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
| Easter Rd/ London Rd (Tracsis site 96 2016)                               |      |       |        |                    |                    |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                           | 118  | 329   | 48     | Easter Rd (N)      | E Norton Pl        | 28       | 4  | 32    | 13       | 2  | 15    | -15                       | -88%  | -17   | -53%    | ✓  | ✓     | 1.3  | 3.5   | ✓  | ✓     |
|                                                                           | 118  | 329   | 220    | Easter Rd (N)      | Easter Rd (S)      | 244      | 2  | 246   | 247      | 3  | 250   | 3                         | 1%    | 4     | 2%      | ✓  | ✓     | 0.0  | 0.3   | ✓  | ✓     |
|                                                                           | 118  | 329   | 25     | Easter Rd (N)      | London Rd          | 29       | 2  | 31    | 13       | 1  | 14    | -16                       | -64%  | -17   | -55%    | ✓  | ✓     | 3.6  | 3.6   | ✓  | ✓     |
|                                                                           | 118  | 49    | 120303 | E Norton Pl        | Easter Rd (N)      | 8        | 0  | 8     | 0        | 0  | 0     | -8                        | -114% | -8    | -100%   | ✓  | ✓     | 3.7  | 4.0   | ✓  | ✓     |

## Trams to Granton, BioQuarter and Beyond Microsimulation Modelling Summary

|                                                             |       |      |        |                   |                   | Observed |    |       | Modelled |    |       | Difference / % Difference |       |       |         |    |       | GEH |       |    |       |
|-------------------------------------------------------------|-------|------|--------|-------------------|-------------------|----------|----|-------|----------|----|-------|---------------------------|-------|-------|---------|----|-------|-----|-------|----|-------|
|                                                             | Node  | From | To     | From              | To                | LV       | HV | Total | LV       | HV | Total | LV                        | LV %  | Total | Total % | LV | Total | LV  | Total | LV | Total |
|                                                             | 118   | 49   | 220    | E Norton Pl       | Easter Rd (S)     | 3        | 0  | 3     | 6        | 0  | 6     | 3                         | 300%  | 3     | 100%    | ✓  | ✓     | 2.3 | 1.4   | ✓  | ✓     |
|                                                             | 118   | 49   | 25     | E Norton Pl       | London Rd         | 551      | 18 | 569   | 609      | 18 | 627   | 58                        | 13%   | 58    | 10%     | ✓  | ✓     | 1.9 | 2.4   | ✓  | ✓     |
|                                                             | 118   | 45   | 120303 | Easter Rd (S)     | Easter Rd (N)     | 277      | 10 | 287   | 224      | 2  | 226   | -53                       | -23%  | -61   | -21%    | ✓  | ✓     | 2.4 | 3.8   | ✓  | ✓     |
|                                                             | 118   | 45   | 48     | Easter Rd (S)     | E Norton Pl       | 4        | 0  | 4     | 18       | 0  | 18    | 14                        | 700%  | 14    | 350%    | ✓  | ✓     | 4.7 | 4.2   | ✓  | ✓     |
|                                                             | 118   | 45   | 25     | Easter Rd (S)     | London Rd         | 66       | 6  | 72    | 156      | 5  | 161   | 90                        | 145%  | 89    | 124%    | ✓  | ✓     | 8.1 | 8.2   | ✗  | ✗     |
|                                                             | 118   | 43   | 120303 | London Rd         | Easter Rd (N)     | 59       | 2  | 61    | 34       | 1  | 35    | -25                       | -60%  | -26   | -43%    | ✓  | ✓     | 3.3 | 3.8   | ✓  | ✓     |
|                                                             | 118   | 43   | 48     | London Rd         | E Norton Pl       | 356      | 18 | 374   | 382      | 19 | 401   | 26                        | 9%    | 27    | 7%      | ✓  | ✓     | 1.6 | 1.4   | ✓  | ✓     |
|                                                             | 118   | 44   | 220    | London Rd         | Easter Rd (S)     | 75       | 0  | 75    | 46       | 2  | 48    | -29                       | -47%  | -27   | -36%    | ✓  | ✓     | 2.9 | 3.4   | ✓  | ✓     |
| Calton Rd/ Abbeyhill (Tracsis site 57 2016)                 |       |      |        |                   |                   |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |
|                                                             | 50176 | 496  | 532    | Abbeyhill (N)     | Abbeyhill (S)     | 570      | 9  | 579   | 669      | 6  | 675   | 99                        | 20%   | 96    | 17%     | ✓  | ✓     | 5.2 | 3.8   | ✗  | ✓     |
|                                                             | 50176 | 496  | 535    | Abbeyhill (N)     | Calton Rd         | 69       | 2  | 71    | 12       | 0  | 12    | -57                       | -106% | -59   | -83%    | ✓  | ✓     | 7.8 | 9.2   | ✗  | ✗     |
|                                                             | 50176 | 534  | 536    | Abbeyhill (S)     | Abbeyhill (N)     | 530      | 18 | 548   | 458      | 9  | 467   | -72                       | -16%  | -81   | -15%    | ✓  | ✓     | 2.4 | 3.6   | ✓  | ✓     |
|                                                             | 50176 | 534  | 535    | Abbeyhill (S)     | Calton Rd         | 94       | 0  | 94    | 133      | 1  | 134   | 39                        | 44%   | 40    | 43%     | ✓  | ✓     | 2.7 | 3.7   | ✓  | ✓     |
|                                                             | 50176 | 498  | 536    | Calton Rd         | Abbeyhill (N)     | 49       | 4  | 53    | 18       | 5  | 23    | -31                       | -76%  | -30   | -57%    | ✓  | ✓     | 4.9 | 4.9   | ✓  | ✓     |
|                                                             | 50176 | 498  | 532    | Calton Rd         | Abbeyhill (S)     | 61       | 3  | 64    | 32       | 4  | 36    | -29                       | -48%  | -28   | -44%    | ✓  | ✓     | 5.3 | 4.0   | ✗  | ✓     |
| Horse Wynd/ Queen's Drive (Tracsis site 69 2016)            |       |      |        |                   |                   |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |
|                                                             | 30228 | 156  | 155    | Horse Wynd        | Horse Wynd        | 0        | 0  | 0     | 0        | 0  | 0     | 0                         | 0%    | 0     | 0%      | ✓  | ✓     | 0.0 | 0.0   | ✓  | ✓     |
|                                                             | 30228 | 156  | 154    | Horse Wynd        | Queen's Drive (E) | 48       | 0  | 48    | 46       | 0  | 46    | -2                        | -4%   | -2    | -4%     | ✓  | ✓     | 1.1 | 0.3   | ✓  | ✓     |
|                                                             | 30228 | 156  | 240    | Horse Wynd        | Queen's Drive (W) | 435      | 4  | 439   | 404      | 6  | 410   | -31                       | -8%   | -29   | -7%     | ✓  | ✓     | 1.0 | 1.4   | ✓  | ✓     |
|                                                             | 30228 | 153  | 155    | Queen's Drive (E) | Horse Wynd        | 138      | 0  | 138   | 100      | 0  | 100   | -38                       | -29%  | -38   | -28%    | ✓  | ✓     | 5.4 | 3.5   | ✗  | ✓     |
|                                                             | 30228 | 153  | 154    | Queen's Drive (E) | Queen's Drive (E) | 0        | 1  | 1     | 0        | 0  | 0     | 0                         | 0%    | -1    | -100%   | ✓  | ✓     | 0.0 | 1.4   | ✓  | ✓     |
|                                                             | 30228 | 153  | 240    | Queen's Drive (E) | Queen's Drive (W) | 401      | 1  | 402   | 389      | 0  | 389   | -12                       | -3%   | -13   | -3%     | ✓  | ✓     | 1.5 | 0.7   | ✓  | ✓     |
|                                                             | 30228 | 1    | 155    | Queen's Drive (W) | Horse Wynd        | 455      | 6  | 461   | 341      | 6  | 347   | -114                      | -27%  | -114  | -25%    | ✗  | ✗     | 6.0 | 5.7   | ✗  | ✗     |
|                                                             | 30228 | 1    | 154    | Queen's Drive (W) | Queen's Drive (E) | 308      | 1  | 309   | 274      | 0  | 274   | -34                       | -12%  | -35   | -11%    | ✓  | ✓     | 2.8 | 2.0   | ✓  | ✓     |
|                                                             | 30228 | 1    | 240    | Queen's Drive (W) | Queen's Drive (W) | 0        | 0  | 0     | 0        | 0  | 0     | 0                         | 0%    | 0     | 0%      | ✓  | ✓     | 0.0 | 0.0   | ✓  | ✓     |
| Horse Wynd/ Canongate/ Abbeyhill                            |       |      |        |                   |                   |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |
|                                                             | 50175 | 532  | 533    | Abbeyhill         | Horse Wynd        | 428      | 7  | 435   | 434      | 6  | 440   | 6                         | 2%    | 5     | 1%      | ✓  | ✓     | 1.2 | 0.2   | ✓  | ✓     |
|                                                             | 50175 | 532  | 534    | Abbeyhill         | Abbeyhill         | 12       | 0  | 12    | 0        | 0  | 0     | -12                       | -171% | -12   | -100%   | ✓  | ✓     | 3.7 | 4.9   | ✓  | ✓     |
|                                                             | 50175 | 532  | 531    | Abbeyhill         | Canongate         | 175      | 22 | 197   | 269      | 4  | 273   | 94                        | 70%   | 76    | 39%     | ✓  | ✓     | 7.4 | 5.0   | ✗  | ✓     |
|                                                             | 50175 | 539  | 534    | Horse Wynd        | Abbeyhill         | 470      | 6  | 476   | 386      | 6  | 392   | -84                       | -19%  | -84   | -18%    | ✓  | ✓     | 4.7 | 4.0   | ✓  | ✓     |
|                                                             | 50175 | 539  | 531    | Horse Wynd        | Canongate         | 116      | 3  | 119   | 49       | 1  | 50    | -67                       | -58%  | -69   | -58%    | ✓  | ✓     | 8.9 | 7.5   | ✗  | ✗     |
|                                                             | 50175 | 539  | 533    | Horse Wynd        | Horse Wynd        | 2        | 0  | 2     | 4        | 0  | 4     | 2                         | 100%  | 2     | 100%    | ✓  | ✓     | 0.0 | 1.2   | ✓  | ✓     |
|                                                             | 50175 | 541  | 534    | Canongate         | Abbeyhill         | 176      | 17 | 193   | 205      | 4  | 209   | 29                        | 20%   | 16    | 8%      | ✓  | ✓     | 2.8 | 1.1   | ✓  | ✓     |
|                                                             | 50175 | 541  | 533    | Canongate         | Horse Wynd        | 35       | 1  | 36    | 12       | 0  | 12    | -23                       | -70%  | -24   | -67%    | ✓  | ✓     | 4.4 | 4.9   | ✓  | ✓     |
|                                                             | 50175 | 541  | 531    | Canongate         | Canongate         | 5        | 0  | 5     | 0        | 0  | 0     | -5                        | -100% | -5    | -100%   | ✓  | ✓     | 3.2 | 3.2   | ✓  | ✓     |
| Melville Dr/ Hope Park Ter/ Summerhall Cres/ Hope Park Cres |       |      |        |                   |                   |          |    |       |          |    |       |                           |       |       |         |    |       |     |       |    |       |

# Trams to Granton, BioQuarter and Beyond

## Microsimulation Modelling Summary

|                                                                |      |       |       |                 |                 | Observed |    |       | Modelled |    |       | Difference / % Difference |       |       |         |    |       | GEH  |       |    |       |
|----------------------------------------------------------------|------|-------|-------|-----------------|-----------------|----------|----|-------|----------|----|-------|---------------------------|-------|-------|---------|----|-------|------|-------|----|-------|
|                                                                | Node | From  | To    | From            | To              | LV       | HV | Total | LV       | HV | Total | LV                        | LV %  | Total | Total % | LV | Total | LV   | Total | LV | Total |
|                                                                | 52   | 88    | 106   | Melville Dr     | Hope Park Ter   | 207      | 8  | 215   | 234      | 3  | 237   | 27                        | 15%   | 22    | 10%     | ✓  | ✓     | 1.3  | 1.5   | ✓  | ✓     |
|                                                                | 52   | 88    | 90    | Melville Dr     | Summerhall Cres | 139      | 4  | 143   | 117      | 4  | 121   | -22                       | -18%  | -22   | -15%    | ✓  | ✓     | 1.8  | 1.9   | ✓  | ✓     |
|                                                                | 52   | 88    | 493   | Melville Dr     | Hope Par Cres   | 137      | 1  | 138   | 64       | 0  | 64    | -73                       | -60%  | -74   | -54%    | ✓  | ✓     | 6.1  | 7.4   | ✗  | ✗     |
|                                                                | 52   | 95    | 96    | Hope Park Ter   | Melville Dr     | 183      | 6  | 189   | 263      | 0  | 263   | 80                        | 49%   | 74    | 39%     | ✓  | ✓     | 5.3  | 4.9   | ✗  | ✓     |
|                                                                | 52   | 95    | 90    | Hope Park Ter   | Summerhall Cres | 65       | 2  | 67    | 68       | 1  | 69    | 3                         | 6%    | 2     | 3%      | ✓  | ✓     | 2.0  | 0.2   | ✓  | ✓     |
|                                                                | 52   | 95    | 493   | Hope Park Ter   | Hope Par Cres   | 54       | 3  | 57    | 113      | 5  | 118   | 59                        | 126%  | 61    | 107%    | ✓  | ✓     | 5.8  | 6.5   | ✗  | ✗     |
|                                                                | 52   | 82    | 96    | Summerhall Cres | Melville Dr     | 220      | 4  | 224   | 218      | 7  | 225   | -2                        | -1%   | 1     | 0%      | ✓  | ✓     | 0.2  | 0.1   | ✓  | ✓     |
|                                                                | 52   | 462   | 106   | Summerhall Cres | Hope Park Ter   | 41       | 1  | 42    | 31       | 4  | 35    | -10                       | -26%  | -7    | -17%    | ✓  | ✓     | 3.3  | 1.1   | ✓  | ✓     |
|                                                                | 52   | 462   | 493   | Summerhall Cres | Hope Par Cres   | 637      | 15 | 652   | 307      | 8  | 315   | -330                      | -57%  | -337  | -52%    | ✗  | ✗     | 14.9 | 15.3  | ✗  | ✗     |
|                                                                | 52   | 572   | 96    | Hope Par Cres   | Melville Dr     | 34       | 2  | 36    | 17       | 0  | 17    | -17                       | -53%  | -19   | -53%    | ✓  | ✓     | 3.8  | 3.7   | ✓  | ✓     |
|                                                                | 52   | 572   | 106   | Hope Par Cres   | Hope Park Ter   | 37       | 3  | 40    | 22       | 2  | 24    | -15                       | -47%  | -16   | -40%    | ✓  | ✓     | 2.1  | 2.8   | ✓  | ✓     |
|                                                                | 52   | 572   | 90    | Hope Par Cres   | Summerhall Cres | 265      | 8  | 273   | 112      | 4  | 116   | -153                      | -65%  | -157  | -58%    | ✗  | ✗     | 11.2 | 11.3  | ✗  | ✗     |
| South Clerk St/ East Preston St/ West Preston St/ Newington Rd |      |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                | 39   | 255   | 70    | S Clerk St      | East Preston St | 36       | 1  | 37    | 98       | 3  | 101   | 62                        | 194%  | 64    | 173%    | ✓  | ✓     | 7.7  | 7.7   | ✗  | ✗     |
|                                                                | 39   | 255   | 254   | S Clerk St      | Newington Rd    | 203      | 13 | 216   | 164      | 3  | 167   | -39                       | -22%  | -49   | -23%    | ✓  | ✓     | 2.7  | 3.5   | ✓  | ✓     |
|                                                                | 39   | 255   | 68    | S Clerk St      | West Preston St | 11       | 0  | 11    | 0        | 0  | 0     | -11                       | -122% | -11   | -100%   | ✓  | ✓     | 4.2  | 4.7   | ✓  | ✓     |
|                                                                | 39   | 485   | 482   | East Preston St | S Clerk St      | 9        | 2  | 11    | 0        | 0  | 0     | -9                        | -129% | -11   | -100%   | ✓  | ✓     | 3.7  | 4.7   | ✓  | ✓     |
|                                                                | 39   | 485   | 254   | East Preston St | Newington Rd    | 18       | 0  | 18    | 85       | 0  | 85    | 67                        | 515%  | 67    | 372%    | ✓  | ✓     | 9.8  | 9.3   | ✗  | ✗     |
|                                                                | 39   | 485   | 68    | East Preston St | West Preston St | 270      | 4  | 274   | 222      | 4  | 226   | -48                       | -19%  | -48   | -18%    | ✓  | ✓     | 3.0  | 3.0   | ✓  | ✓     |
|                                                                | 39   | 250   | 482   | Newington Rd    | S Clerk St      | 390      | 13 | 403   | 420      | 11 | 431   | 30                        | 9%    | 28    | 7%      | ✓  | ✓     | 1.0  | 1.4   | ✓  | ✓     |
|                                                                | 39   | 250   | 70    | Newington Rd    | East Preston St | 140      | 2  | 142   | 220      | 4  | 224   | 80                        | 63%   | 82    | 58%     | ✓  | ✓     | 5.6  | 6.1   | ✗  | ✗     |
|                                                                | 39   | 250   | 68    | Newington Rd    | West Preston St | 50       | 2  | 52    | 34       | 0  | 34    | -16                       | -38%  | -18   | -35%    | ✓  | ✓     | 1.6  | 2.7   | ✓  | ✓     |
|                                                                | 39   | 66    | 482   | West Preston St | S Clerk St      | 30       | 1  | 31    | 12       | 3  | 15    | -18                       | -69%  | -16   | -52%    | ✓  | ✓     | 3.8  | 3.3   | ✓  | ✓     |
|                                                                | 39   | 66    | 70    | West Preston St | East Preston St | 228      | 3  | 231   | 200      | 1  | 201   | -28                       | -13%  | -30   | -13%    | ✓  | ✓     | 2.2  | 2.0   | ✓  | ✓     |
|                                                                | 39   | 66    | 254   | West Preston St | Newington Rd    | 21       | 1  | 22    | 44       | 0  | 44    | 23                        | 128%  | 22    | 100%    | ✓  | ✓     | 4.2  | 3.8   | ✓  | ✓     |
| Cameron Toll                                                   |      |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                                                | 147  | 30048 | 30    | Dalkeith Rd     | Peffermill Rd   | 144      | 4  | 148   | 171      | 2  | 173   | 27                        | 23%   | 25    | 17%     | ✓  | ✓     | 2.9  | 2.0   | ✓  | ✓     |
|                                                                | 147  | 30048 | 30119 | Dalkeith Rd     | Old Dalkeith Rd | 343      | 2  | 345   | 188      | 4  | 192   | -155                      | -48%  | -153  | -44%    | ✗  | ✗     | 9.9  | 9.3   | ✗  | ✗     |
|                                                                | 147  | 30048 | 35    | Dalkeith Rd     | Sharpedale Loan | 27       | 0  | 27    | 41       | 0  | 41    | 14                        | 52%   | 14    | 52%     | ✓  | ✓     | 2.4  | 2.4   | ✓  | ✓     |
|                                                                | 147  | 30048 | 10    | Dalkeith Rd     | Lady Rd         | 233      | 4  | 237   | 144      | 6  | 150   | -89                       | -41%  | -87   | -37%    | ✓  | ✓     | 5.5  | 6.3   | ✗  | ✗     |
|                                                                | 147  | 384   | 30050 | Peffermill Rd   | Dalkeith Rd     | 138      | 13 | 151   | 151      | 0  | 151   | 13                        | 11%   | 0     | 0%      | ✓  | ✓     | 1.5  | 0.0   | ✓  | ✓     |
|                                                                | 147  | 384   | 30119 | Peffermill Rd   | Old Dalkeith Rd | 39       | 5  | 44    | 30       | 0  | 30    | -9                        | -31%  | -14   | -32%    | ✓  | ✓     | 0.2  | 2.3   | ✓  | ✓     |
|                                                                | 147  | 384   | 35    | Peffermill Rd   | Sharpedale Loan | 40       | 2  | 42    | 35       | 1  | 36    | -5                        | -14%  | -6    | -14%    | ✓  | ✓     | 0.3  | 1.0   | ✓  | ✓     |
|                                                                | 147  | 384   | 10    | Peffermill Rd   | Lady Rd         | 398      | 17 | 415   | 347      | 19 | 366   | -51                       | -15%  | -49   | -12%    | ✓  | ✓     | 1.3  | 2.5   | ✓  | ✓     |
|                                                                | 147  | 30054 | 30050 | Old Dalkeith Rd | Dalkeith Rd     | 340      | 5  | 345   | 293      | 3  | 296   | -47                       | -16%  | -49   | -14%    | ✓  | ✓     | 1.6  | 2.7   | ✓  | ✓     |
|                                                                | 147  | 30054 | 30    | Old Dalkeith Rd | Peffermill Rd   | 151      | 28 | 179   | 127      | 3  | 130   | -24                       | -18%  | -49   | -27%    | ✓  | ✓     | 2.0  | 3.9   | ✓  | ✓     |

## Trams to Granton, BioQuarter and Beyond Microsimulation Modelling Summary

|                                | Node | From  | To    | From            | To              | Observed |    |       | Modelled |    |       | Difference / % Difference |       |       |         |    |       | GEH  |       |    |       |
|--------------------------------|------|-------|-------|-----------------|-----------------|----------|----|-------|----------|----|-------|---------------------------|-------|-------|---------|----|-------|------|-------|----|-------|
|                                |      |       |       |                 |                 | LV       | HV | Total | LV       | HV | Total | LV                        | LV %  | Total | Total % | LV | Total | LV   | Total | LV | Total |
|                                | 147  | 803   | 35    | Old Dalkeith Rd | Sharpedale Loan | 45       | 2  | 47    | 38       | 0  | 38    | -7                        | -17%  | -9    | -19%    | ✓  | ✓     | 0.6  | 1.4   | ✓  | ✓     |
|                                | 147  | 30054 | 10    | Old Dalkeith Rd | Lady Rd         | 274      | 2  | 276   | 225      | 6  | 231   | -49                       | -20%  | -45   | -16%    | ✓  | ✓     | 3.0  | 2.8   | ✓  | ✓     |
|                                | 147  | 275   | 30050 | Sharpedale Loan | Dalkeith Rd     | 18       | 0  | 18    | 10       | 0  | 10    | -8                        | -53%  | -8    | -44%    | ✓  | ✓     | 1.4  | 2.1   | ✓  | ✓     |
|                                | 147  | 275   | 30    | Sharpedale Loan | Peffermill Rd   | 15       | 0  | 15    | 17       | 0  | 17    | 2                         | 13%   | 2     | 13%     | ✓  | ✓     | 0.3  | 0.5   | ✓  | ✓     |
|                                | 147  | 275   | 30119 | Sharpedale Loan | Old Dalkeith Rd | 6        | 1  | 7     | 4        | 0  | 4     | -2                        | -33%  | -3    | -43%    | ✓  | ✓     | 0.9  | 1.3   | ✓  | ✓     |
|                                | 147  | 275   | 10    | Sharpedale Loan | Lady Rd         | 5        | 1  | 6     | 0        | 0  | 0     | -5                        | -167% | -6    | -100%   | ✓  | ✓     | 2.4  | 3.5   | ✓  | ✓     |
|                                | 147  | 9     | 30050 | Lady Rd         | Dalkeith Rd     | 194      | 9  | 203   | 394      | 7  | 401   | 200                       | 118%  | 198   | 98%     | ✗  | ✗     | 10.8 | 11.4  | ✗  | ✗     |
|                                | 147  | 9     | 30    | Lady Rd         | Peffermill Rd   | 328      | 2  | 330   | 247      | 8  | 255   | -81                       | -27%  | -75   | -23%    | ✓  | ✓     | 4.0  | 4.4   | ✓  | ✓     |
|                                | 147  | 9     | 30119 | Lady Rd         | Old Dalkeith Rd | 332      | 11 | 343   | 166      | 4  | 170   | -166                      | -55%  | -173  | -50%    | ✗  | ✗     | 10.9 | 10.8  | ✗  | ✗     |
|                                | 147  | 9     | 35    | Lady Rd         | Sharpedale Loan | 8        | 0  | 8     | 0        | 0  | 0     | -8                        | -100% | -8    | -100%   | ✓  | ✓     | 4.0  | 4.0   | ✓  | ✓     |
| <b>Lady Rd/ Craigmillar Pk</b> |      |       |       |                 |                 |          |    |       |          |    |       |                           |       |       |         |    |       |      |       |    |       |
|                                | 17   | 30191 | 30137 | Craigmillar Pk  | Lady Rd         | 155      | 6  | 161   | 178      | 1  | 179   | 23                        | 16%   | 18    | 11%     | ✓  | ✓     | 1.4  | 1.4   | ✓  | ✓     |
|                                | 17   | 30191 | 30178 | Craigmillar Pk  | Liberton Rd     | 325      | 16 | 341   | 248      | 9  | 257   | -77                       | -26%  | -84   | -25%    | ✓  | ✓     | 5.5  | 4.9   | ✗  | ✓     |
|                                | 17   | 30191 | 181   | Craigmillar Pk  | Esslemont Rd    | 11       | 1  | 12    | 13       | 0  | 13    | 2                         | 20%   | 1     | 8%      | ✓  | ✓     | 0.9  | 0.3   | ✓  | ✓     |
|                                | 17   | 30326 | 30187 | Lady Rd         | Craigmillar Pk  | 218      | 4  | 222   | 201      | 2  | 203   | -17                       | -10%  | -19   | -9%     | ✓  | ✓     | 0.7  | 1.3   | ✓  | ✓     |
|                                | 17   | 30326 | 30178 | Lady Rd         | Liberton Rd     | 222      | 10 | 232   | 204      | 7  | 211   | -18                       | -9%   | -21   | -9%     | ✓  | ✓     | 0.4  | 1.4   | ✓  | ✓     |
|                                | 17   | 30326 | 181   | Lady Rd         | Esslemont Rd    | 366      | 4  | 370   | 381      | 19 | 400   | 15                        | 5%    | 30    | 8%      | ✓  | ✓     | 1.7  | 1.5   | ✓  | ✓     |
|                                | 17   | 30177 | 30187 | Liberton Rd     | Craigmillar Pk  | 744      | 22 | 766   | 416      | 11 | 427   | -328                      | -49%  | -339  | -44%    | ✗  | ✗     | 13.5 | 13.9  | ✗  | ✗     |
|                                | 17   | 30177 | 30137 | Liberton Rd     | Lady Rd         | 321      | 15 | 336   | 481      | 6  | 487   | 160                       | 55%   | 151   | 45%     | ✗  | ✗     | 6.9  | 7.4   | ✗  | ✗     |
|                                | 17   | 30177 | 181   | Liberton Rd     | Esslemont Rd    | 84       | 0  | 84    | 93       | 1  | 94    | 9                         | 11%   | 10    | 12%     | ✓  | ✓     | 1.0  | 1.1   | ✓  | ✓     |
|                                | 17   | 182   | 30187 | Esslemont Rd    | Craigmillar Pk  | 7        | 1  | 8     | 9        | 0  | 9     | 2                         | 29%   | 1     | 13%     | ✓  | ✓     | 0.7  | 0.3   | ✓  | ✓     |
|                                | 17   | 182   | 30137 | Esslemont Rd    | Lady Rd         | 258      | 2  | 260   | 243      | 10 | 253   | -15                       | -6%   | -7    | -3%     | ✓  | ✓     | 0.9  | 0.4   | ✓  | ✓     |
|                                | 17   | 182   | 30178 | Esslemont Rd    | Liberton Rd     | 26       | 0  | 26    | 17       | 3  | 20    | -9                        | -38%  | -6    | -23%    | ✓  | ✓     | 1.5  | 1.3   | ✓  | ✓     |