Technical Note
July 2025

Trams to Granton, BioQuarter & Beyond: Technical Note No. 6 - Future Depot Requirements

1 Introduction

Purpose of this note

1.1 The expansion of the Edinburgh Tram network would require additional trams and, consequently, additional depot and/or stabling capacity to be provided. The purpose of this report is to:

- Understand the existing tram network size and capacity for an enhanced network;
- Identify the potential overall size of the vehicle fleet associated with options for the development of a North-South tram line; and
- Identify the high-level requirements for additional facilities (depot/ stabling) that would need to be provided to support an expanded network.

1.2 The aim is to identify the capacity constraints in terms of depot and/or stabling and identify what is required to accommodate an expanded network.

Structure of this report

1.3 This document is structured as follows:

- **Existing Situation:** within this section we summarise the existing situation in terms of depot and stabling capacity and use;
- **Future Situation with Expanded Network:** This considers the current options being considered for an expanded network and associated scenarios for network development and service frequencies;
- **Capacity Requirements with Expanded Tram Network:** within this section we set out what the additional tram vehicle and associated capacity requirements would be, as well as high level depot facilities requirements; and
- **Depot/Stabling Options:** this section summarises three high level options to support the operational requirements of

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the expanded tram network.

2 Existing Situation

Existing Depot and Stabling Facilities

Gogar Depot Site

2.1 The current depot is located at Gogar (EH12 0AX), at the western end of the existing tram alignment, when following the tram route, some 15km the Newhaven terminus and 3km from the Edinburgh Airport terminus.

Figure 2-1 Gogar Tram Depot

Source: Google Maps

2.2 The existing site is shown in Figure 2-1. It is bordered by the Edinburgh Airport boundary to the north, Edinburgh Gateway Station to the east and Glasgow Road (A8) to the south.

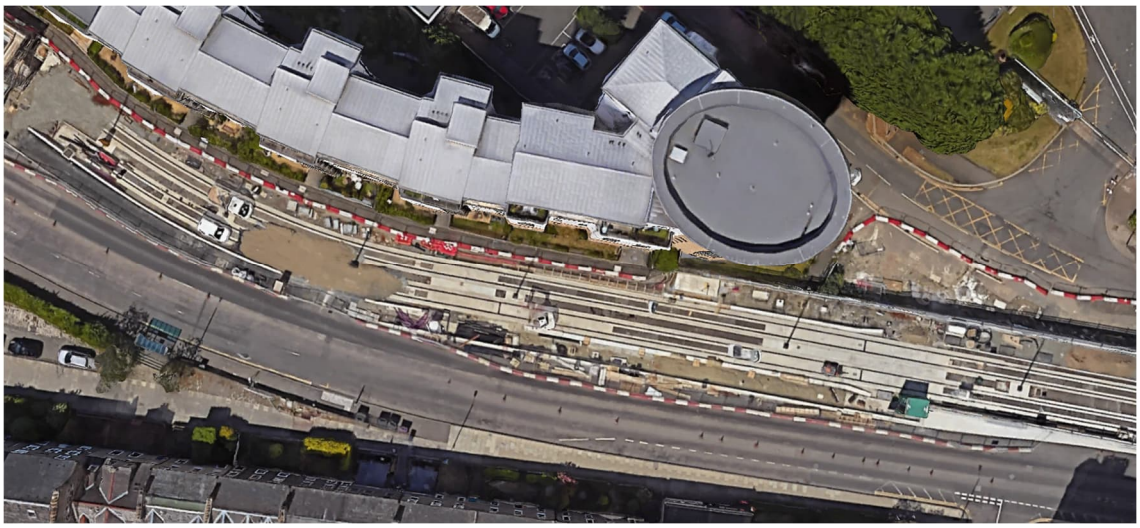
2.3 The depot is adjacent to the existing alignment with access and exit from only one direction without a reverse move. There is a turning loop on site so vehicles can enter from the main line and progress to stabling in one move. The stabling sidings are double ended with a road and rail interface on the turning loop. The workshop provides full fleet maintenance facilities and supports an effective operational capacity of eight tram sets.

2.4 The approximate size of the depot is 68,500m^2.

Newhaven Stabling Facility

2.5 The Newhaven tram stop has double track extending 60 metres beyond it to provide a stabling facility.

Figure 2-2: Newhaven Tram Stop



Source: Google Maps

Existing Capacity

Gogar Depot Capacity

2.6 The current depot has an estimated capacity for 34 trams of approximately 43m in length. This capacity includes both stabling facilities and indoor depot facilities. Edinburgh Trams currently operates a fleet of 27 trams, indicating that the site can support up to seven additional tram sets without expansion. The site also includes office accommodation and staff welfare facilities, approximately 110 car parking spaces, and cycle parking.

Newhaven Stabling Capacity

2.7 Additional stabling is provided at Newhaven. It is understood this allows for overnight stabling of three tram sets (including use of the tram stop). It should be noted that this facility does not enable preparation of trams prior to launch. This means that whilst trams can be parked at Newhaven, they still need to return to the main depot for full operational preparation before beginning passenger services.

2.8 An overview of existing depot and stabling capacity is shown in Table 2-1.

Table 2-1: Depot & Stabling Capacity

	Existing fleet	Existing depot/stabling capacity	Spare capacity
Existing	27	37 • Gogar capacity = 34 trams • Newhaven stabling = 3 trams	10

Existing Service Patterns

2.9 According to Edinburgh Trams December 2024 timetable, trams run services every 7 minutes (8+ trams per hour) between Newhaven and the Airport. This reduces to every 10 minutes outside of peak and daytime in the evening period. The first trams depart at 05:20 from Newhaven and 06:30 from the Airport. The last trams depart at 22:52 from Newhaven and 22:52 from the Airport.

2.10 Journey times are between Airport and Newhaven are 57 minutes. A round trip, including layover is 124 minutes as summarised in Table 2-2.

Table 2-2 Airport to Newhaven Journey Times

Routes & Journey Times	Outward	Return	Round Trip	Round trip including layover
Airport to Newhaven	57	57	114	124

3 Future Situation with Expanded Network

Introduction

3.1 It is important to consider future needs for the tram network in terms of a planned service pattern and associated vehicle requirements to 'future-proof' the associated supporting infrastructure.

3.2 The identification of future stabling/ depot requirements needs to take account of route options under consideration and different potential scenarios for network development and service frequencies such that both the nearer-term and longer-term requirement are considered.

3.3 This section sets out the assumptions relating to route options, estimated journey times, and service frequency for the tram network extension between Granton and locations in South East (SE) Edinburgh, via two options (via Roseburn and via Orchard Brae). This chapter informs the capacity requirements set out in Chapter 4.

Options

3.4 Two options are under consideration for the northern part of the route between Granton and the City Centre:

- **Option 1 via Roseburn:** this option follows the Roseburn Path from the A8 to Ferry Road, west of Crewe Toll. The alignment would be fully segregated along this portion, following an old railway track bed, and now an active travel corridor and part of NCN1.

- **Option 2 via Orchard Brae:** this option would be on-street utilising Queensferry Street, Dean Bridge, Orchard Brae and Crewe Road South towards Crewe Toll.

3.5 In addition to these two options, there are several scenarios for the future expansion of the southern section of the route beyond the BioQuarter as well as scenarios relating to frequency of service. The longer the routes and the higher the frequency, the more vehicles would be required to operate the service.

Scenarios for Network Development

3.6 Four route scenarios allow consideration of how the tram network could develop over time:

- **Scenario 1 – Granton to BioQuarter**: current Options Assessment work is focussed on this scenario;
- **Scenario 2 – Granton to Shawfair**: an indicative route to connect with Midlothian;
- **Scenario 3 – Granton to Sheriffhall**: an indicative option representing a route extending into Midlothian and operating at a future 'end state' frequency of 16 trams per hour. This scenario provides an idea a future end-state depot/ stabling requirement for an expanded network and higher service level;
- **Scenario 4 – Granton to Newhaven**: where the Roseburn option is progressed in isolation as a potential early phase of network expansion.

Estimated Journey Times

3.7 Estimated journey times for the two route options (via Roseburn and via Orchard Brae respectively) are shown below in Table 3-1 and Table 3-2.[1] In estimating the 'round trip' journey times layover of 10 minutes has been assumed.

Table 3-1: North-South Tram via Roseburn Journey Times

Scenario	Round Trip	Round trip including layover
1. Granton to BioQuarter	105	115
2. Granton to Shawfair	114	124
3. Granton to Sheriffhall	121	131
4. Granton to Newhaven	114	124

Table 3-2: North-South Tram via Orchard Brae Journey Times

Scenario	Round Trip	Round trip including layover
1. Granton to BioQuarter	120	130
2. Granton to Shawfair	129	139
3. Granton to Sheriffhall	136	146
4. Granton to Newhaven	129	139

3.8 The Roseburn option is faster than Orchard Brae, as it benefits from more segregated running and fewer constraints. The Orchard Brae alignment, while shorter, includes more

[1] Estimates based on VISSUM modelling assumptions carried out in the 2032 Strategic Model Tram work for both Roseburn and Orchard Brae route options.

complex interactions and less segregation, which contributes to its comparatively longer journey times.

Service Frequency

3.9 In addition to the scenarios, future growth in travel demand is likely to require higher tram service frequencies over time. Indicative service plans have been developed for the expanded network and these are outlined below in Table 3-3.

3.10 For planning capacity purposes, it is assumed that there would be a maximum capacity of 16 trams per hour (tph) on each of the Newhaven to Airport, Granton and South East corridors, represented by Scenario 3.

Table 3-3: Service level by Scenario

Scenario	Service Frequency				
	Do Minimum (10tph)	5tph	10 tph	12tph	16tph
Existing	✓				
1. Granton to BioQuarter			✓	✓	
2. Granton to Shawfair			✓	✓	
3. Granton to Sheriffhall					✓
4. Granton to Newhaven	✓	✓			

4 Capacity Requirements for an Expanded Tram Network

Introduction

4.1 An expanded tram network would require additional tram sets over and above the current provision. It is thus necessary to cater for future capacity requirements and to ensure that there is sufficient capacity to cater for growing tram demand and patronage.

4.2 For the purposes of considering depot/stabling needs it is necessary to consider potential future capacity requirements at the outset, to ensure that planned provision allows for future-proofing.

Vehicle Requirements

4.3 The number of vehicles has been estimates based on the indicative route, journey time and service patterns set out in Section 3.

Vehicle requirements based on that service pattern are summarised in Table 4-1.

4.4 The tram requirement is estimated using a run time model and includes assumptions on:

- Tram journey times from Table 3-1 and Table 3-2;
- An assumed ‘spares ratio’ of 10%; and
- Trams per hour specification from Table 3-3.

4.5 Vehicles required are based on round trips including layover divided by the specified trams per hour requirement to determine the maximum number of vehicles needed on the network at any one time and uplifting the total to include spare vehicles.

4.6 These differences show that extending the North–South service further south from BioQuarter to Shawfair and then to Sheriffhall—incrementally increases the number of vehicles required for either options via Roseburn or Orchard Brae. This has a direct impact on overall fleet size and depot capacity planning.

Table 4-1: Peak Vehicle Requirement by Option, Scenario and Service Frequency

Scenario/Service Frequency	Option 1: Roseburn				Option 2: Orchard Brae			
	Airport to Newhaven	North – South	Total	Total including Spares	Airport to Newhaven	North – South	Total	Total including Spares
Service Frequency: 8tph								
Existing / Do Minimum	21	-	21	**24**	21	-	21	**24**
Service Frequency: 10tph								
To BioQuarter	21	19	40	**44**	21	22	43	**48**
To Shawfair	21	21	42	**47**	21	23	44	**49**
To Sheriffhall	21	22	43	**48**	21	24	45	**50**
Service Frequency: 12tph								
To BioQuarter	25	23	48	**53**	25	26	51	**57**
To Shawfair	25	25	50	**55**	25	28	53	**59**
To Sheriffhall	25	26	51	**57**	25	29	54	**60**
Service Frequency: 16tph (Indicative end-state)								
Granton to Sheriffhall	34	33	67	**74**	34	37	71	**79**
Service Frequency: 5tph (Phased option)								
Granton to Newhaven	21	12	33	**37**	n/a	n/a	n/a	**n/a**

Depot Capacity Requirements

4.7 The additional depot capacity required has been calculated. This is based on the number of vehicles required in each scenario and route option and compared against the current depot capacity. This is shown in Table 4-2.

Table 4-2: Depot/ Stabling Capacity Requirement by Option, Scenario and Service Frequency

Scenario/ Service Frequency	Existing depot/ stabling capacity	Option 1: Roseburn		Option 2: Orchard Brae	
		Total Vehicles including Spares	Required additional depot/ stabling capacity	Total Vehicles including Spares	Required additional depot/ stabling capacity
Service Frequency: 8tph					
Existing / Do Minimum	37	24	0	24	0
Service Frequency: 10tph					
To BioQuarter	37	44	7	48	11
To Shawfair	37	47	10	49	12
To Sheriffhall	37	48	11	50	13
Service Frequency: 12tph					
To BioQuarter	37	53	16	57	20
To Shawfair	37	55	18	59	22
To Sheriffhall	37	57	20	60	23
Service Frequency: 16tph (Indicative end-state)					
Granton to Sheriffhall	37	74	37	79	42
Service Frequency: 5tph (Phased option)					
Granton to Newhaven	37	37	0	n/a	n/a

Conclusions

4.8 If a route were taken forward **via Roseburn**, then:

- A phased option comprising only the infrastructure sections between Granton and the city centre could be delivered without the need for additional depot/ stabling capacity. This is on the assumption that the extension between Granton and Newhaven is at a 5 tph frequency.
- A North-South route between Granton and BioQuarter would require additional depot / stabling for an additional 7 vehicles (at 10 tph) or 16 vehicles (at 12tph). For planning purposes it would be prudent to identify additional capacity for 10 and 20 vehicles respectively.

- If the route were extended further to Shawfair, the option via Roseburn will require 10 vehicles (at 10 tph) or 18 (at 12 tph). Extending to Sheriffhall would require 11 vehicles (at 10 tph) or 20 vehicles at (12 tph); and
- Under the indicative end-state network with a service frequency of 16 tph (Granton to Sheriffhall and Airport to Newhaven), the total vehicle requirement rises to 74, meaning space for 37 additional vehicles would be required.

4.9 The analysis shows that Roseburn would require a lower overall depot/stabling requirements than Orchard Brae, under all comparable service level and route option scenarios.

Additional Depot Considerations

4.10 In addition to capacity needs, a range of other considerations are required, informing the wider supporting functions required of depot facilities, such as fuelling, maintenance, cleaning and staff welfare.

Depot/ Stabling Facilities

An expanded network will require additional depot and stabling facilities to accommodate the increase in tram vehicles required. The additional facilities could be located at an expanded Gogar site, or a new site introduced for Edinburgh Tram. Some basic functions would be expected to include:

- Entry and exit
- Stabling
- Fuelling
- Washing
- Workshop
- Storage
- Staff welfare
- Supervision and sign-on
- Sanding
- Stand by control room

4.11 Should a second depot or stabling facility be required some of the functions above could be undertaken at the Gogar depot, with a second depot / stabling providing complementary functions. For example, heavy maintenance could take place at Gogar, and light maintenance at a second facility. However, the core requirement of an expanded or second facility would be to accommodate the fleet required to support an expanded network.

4.12 In addition to tram storage facilities, additional supporting infrastructure will also be required such as additional supporting facilities for the trams themselves (e.g. workshops, cleaning facilities, wash plant), staff welfare facilities, car parking and cycle parking.

Battery Powered Trams

4.13 We have assumed additional tram sets would be of a similar specification and servicing and maintenance requirement. However, if battery-powered trams were to be introduced this would affect servicing regimes, depot infrastructure, and operational planning.

4.14 Such vehicles may require dedicated charging facilities, either at termini or along the route, and could influence decisions around depot layout and stabling capacity. Further detailed work will be needed to assess the feasibility, operational implications, and cost considerations associated with this option.

5 Depot / Stabling Options

5.1 A range of options are under consideration to support the operational requirements of the expanded tram network. The following options are currently under early consideration, and a preferred solution has not been identified at this stage:

- **Expansion of existing facility (Gogar):** While initial assessments indicate that expanding the physical footprint of the Gogar depot may not be feasible, there may be potential to increase tram stabling capacity within the existing site boundaries. This could involve reconfiguration or optimisation of current layouts and operations.
- **Additional stabling along the route:** Provision of supplementary stabling facilities between Granton and BioQuarter is being explored. Accommodating up to ten additional trams at these locations would be sufficient to support a 10 tph service on both the Airport–Newhaven and Granton–BioQuarter routes.
- **New Depot Facility:** A new depot is likely to be required should the network extend beyond BioQuarter. A location on the south-eastern section of the proposed route would offer operational advantages and is considered the most suitable area for such a facility.

5.2 Further detailed work will be required to assess the feasibility, costs, and operational implications of each option before a preferred approach can be identified.

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